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FORMERLY

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(Original Official Organ U. S. Vet. Med. Ass'n.)

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The American Veterinary Medical Association

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JOURNAL

OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n.)

H. Preston Hoskins, Secretary-Editor, 716 Book Building, Detroit, Mich.

T. A. Sigler, President, Greencastle, Ind. M. Jacob, Treasurer, Knoxville, Tenn.

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Vol. LXIX, N. S. Vol. 22 **September, 1926** **No. 6**

THE LEXINGTON MEETING

Although the attendance fell a little bit short of the number expected, the Lexington meeting will go down in A. V. M. A. history as one of the most enjoyable ever held by the Association. From the standpoint of registration figures, the meeting ranks with Montreal, approximately 800 having been in attendance at both of these meetings. All of the sessions of the convention, both general and sectional, were unusually well attended. The election of officers was held at the general session, Wednesday afternoon, and the tellers reported 311 ballots cast in the presidential election. This compares with 336 cast at the Des Moines meeting where the registration figures exceeded 1200, and 244 at Montreal, with a registration of about 800.

Even with the attendance of about 800, the certificate plan fell through. Only 150 certificates were turned in, showing the large proportion of members and their families who travel to our conventions by automobile. Cars of veterinarians were noted around the headquarters bearing license plates of Michigan, Iowa, and Louisiana, as well as every state adjoining Kentucky. Veterinarians were present from thirty-seven states, the District of Columbia, Hawaii, Canada, Germany and Austria.

The program was followed practically without deviation. Hon. J. W. Fields, Governor of Kentucky, and Hon. Hogan

Yancey, Mayor of Lexington, were on hand to welcome the Association to the Blue Grass Region. On behalf of the Association, Dr. N. S. Mayo, of Chicago, delivered a very scholarly response. The address of President Adams was considerably shorter than many similar addresses of the past and will be found elsewhere in this issue of the JOURNAL.

The report of the Secretary-Editor, as well as the financial statement of the Treasurer, showed the Association to be in a healthy condition, both from the standpoint of membership as well as finances. The Secretary reported approximately 300 applications for membership during the year and a larger number of members with dues paid up to date then for any year during the period he has been in office. Although there was a slight shrinkage in the total membership, as a result of deaths, resignations and delinquencies, the loss this year was less than for any year during the past five years.

The election of officers resulted as follows:

President, Dr. T. A. Sigler, Greencastle, Indiana.

First vice-president, Dr. W. W. Dimock, Lexington, Ky.

Second vice-president, Lt. Col. Wm. P. Hill, Washington, D. C.

Third vice-president, Dr. Benjamin McInnes, Charleston, S. C.

Fourth vice-president, Dr. J. C. Flynn, Kansas City, Mo.

Fifth vice-president, Dr. Wm. Bell, Nashville, Tenn.

Treasurer, Dr. M. Jacob, Knoxville, Tenn.

At the sectional meetings the following officers were selected to man the four sections for the coming year:

General Practice

Chairman:—Dr. J. N. Frost, Ithaca, N. Y.
Secretary:—Dr. E. P. Althouse, Sunbury, Pa.

Sanitary Science and Food Hygiene

Chairman:—Dr. E. A. Cahill, Indianapolis, Ind.
Secretary:—Dr. N. F. Williams, Fort Worth, Texas.

Education and Research

Chairman:—Dr. E. M. Pickens, College Park. Md.
Secretary:—Dr. R. A. Runnells, Blacksburg, Va.

Small Animal Practice

Chairman:—Dr. F. R. Whipple, Peoria, Ill.
Secretary:—Dr. H. J. Milks, Ithaca, N. Y.

Philadelphia was selected as the place for holding the 1927 meeting without opposition. The dates for the meeting will be selected by the Executive Board and announced later.

The reports presented by the various committees showed that many of these had been quite active during the year. The Committee on Resolutions presented for adoption by the Association several resolutions of unusual importance to veterinarians. The Committee on Veterinary Biologics presented a program for future work which was approved. The Committee on Legislation reported what had been done in the matter of securing legislation that would place our Army veterinarians on the same plane with other professional corps in the Army. The Committee on History reported considerable progress during the year, as well as a comprehensive program for future activities. The Committee on Necrology reported the deaths of two honorary members and thirty-five active members. The Committee on Schmidt Memorial reported that over $300.00 had been raised and the Association approved the recommendation that the Committee fix $1,000.00 as the goal.

The International Committee on Tuberculosis presented a very comprehensive report in sections. The report of the Committee on Abortion was along somewhat different lines from reports of recent years. The Committee on Budget presented a report calling for the expenditure of approximately $11,000.00 during the coming year. The Committee on Policy called attention to the activities of the past year and the recommendations of the Committee were incorporated in a resolution presented to the Association by the Committee on Resolutions. The report of the Committee on Intelligence and Education called attention to the changing functions of this Committee, as a result of the changes which have been made in the veterinary educational system of this country. The inspection of the veterinary colleges does not now begin to have the importance which it had in years past. On the other hand, it would appear to be one of the most important functions of this Committee to gather information, data and statistics concerning veterinarians and veterinary activities, so that these may be available in promoting the interests of veterinarians and in connection with various activities of the Association.

The general session, Wednesday evening, was really a symposium on breeding, The Association was honored by the presence of Captain Raymond I. Lovell, of the Army Remount

Depot, Front Royal, Va., who presented a paper, entitled, "Breeding Operations in the United States Army," illustrated by lantern-slides and a two-reel film. One of the most interesting papers presented during the meeting was "The Inheritance of Coat Colors in Domestic Live Stock," by Professor W. S. Anderson, of the University of Kentucky. Not only the material in the paper but the manner in which the author presented it proved to be intensely interesting. Dr. F. B. Hadley, of the University of Wisconsin, presented "Inherited Defects of Live Stock" and was followed by Dr. H. S. Murphey, of the Iowa State College, whose subject was "Some Observations on the Oestrous Cycle and Reproductive Phenomena of the Horse."

The clinic, Friday afternoon, was divided into two sections. President Adams presided over the large-animal clinic, of which the leading attraction was Professor Franz Benesch, of Vienna, Austria, who demonstrated his new wire-saw instrument for use in veterinary obstetrics, as well as his method of producing local anesthesia in obstetrical work and in connection with diseases of the genital organs. The small-animal clinic proved equally attractive and many veterinarians for the first time had an opportunity to see demonstrations of the use of endoscopic diagnostic instruments. These were shown and methods demonstrated by Dr. J. G. Horning, of Houston, Texas.

In keeping with the custom of recent years, the various alumni groups got together, Tuesday evening, for their meetings. Most of these were in the form of dinners. During the evening, the hotel resounded with the college yells coming from the different rooms where the different alumni groups were congregated. Following these meetings, everybody went over to the Basket Ball Building of the University of Kentucky for the President's reception and dance.

Thursday afternoon was given over to an automobile trip to a number of the various breeding farms surrounding Lexington. This proved to be one of the most enjoyable features of the week. Many famous horses known by name to members of the party were seen in the flesh for the first time by many of the veterinarians and their wives. Man o' War was by all odds the center of attraction when the party stopped to pay him homage.

The ladies had a very busy week, starting with the opening session of the convention, Tuesday morning, and continuing through to Friday afternoon. The Women's Auxiliary reported

a very successful meeting and a genuine renewal of interest in the work of that organization.

The members of the Local Committee on Arrangements were the recipients of a large amount of well-earned praise for the manner in which they had prepared for the convention and for the way in which all of the plans were carried out. The managements of the Phoenix and Lafayette hotels were complimented on the way in which they took care of their guests. Dean and Mrs. Thomas P. Cooper and Dr. and Mrs. W. W. Dimock and their respective staffs, of the University of Kentucky, richly deserved the unstinted praise accorded them for their efforts to make the visitors' stay in Lexington a pleasant one. The newspapers of Lexington are to be complimented upon the amount of space given to reports of the meeting. These were very full and unusually accurate.

OUR NEW PRESIDENT

Dr. Thomas A. Sigler, of Greencastle, Indiana, elected president of the American Veterinary Medical Association at the meeting in Lexington, is well qualified to fill the important office with which he has been honored.

Dr. Sigler's parents were pioneer settlers in Putnam County, Indiana. His father was one of the earliest breeders of fine horses and pure-bred cattle and the Sigler farm soon became noted for the grade of its live stock. It was on this farm that our new president was born, September 15, 1879. He lost his father when only thirteen years of age and it was only by enduring many hardships and overcoming many difficulties that Dr. Sigler was enabled to obtain an education and at the same time assist his mother in the management of the farm.

Following his graduation from high school, he enrolled as a student in the Indiana Veterinary College, from which he was graduated with honors in 1902. He immediately entered private practice at Greencastle. From 1909 to 1913 he was a member of the teaching staff of the Terre Haute Veterinary College. He was also a member of the faculty of the Indiana Veterinary College from 1921 until the closing of the school in 1924.

In 1912, Dr. Sigler was assigned to make a secret investigation of the efficiency of the federal meat inspection service, as conducted by the Bureau of Animal Industry. He made his report before Congress the same year. The same year Dr. Sigler

THOMAS A SIGLER, D. V. M.

President of the American Veterinary Medical Association

1926—1927

was appointed a member of the Indiana State Board of Veterinary Medical Examiners. He served as president of the Indiana Veterinary Medical Association (1911-1912). For several years, he served as assistant state veterinarian of Indiana. In 1914, he was appointed official appraiser for Indiana by the Bureau of Animal Industry, in connection with the foot-and-mouth disease outbreak of that year.

Dr. Sigler joined the American Veterinary Medical Association in 1909. and has been a prominent figure at many of the meetings held since that time. He served as a member of the Committee on Local Arrangements for the Indianapolis meeting (1912), as chariman of the Finance Committee (1913-1915), as resident secretary for Indiana (1915-1916 and 1922-1923) and as representative to the Board of Managers of the Horse Association of America (1924-1926).

Dr. Sigler, in addition to being a veterinarian, is a farmer in every sense of the word. He derives a great deal of pleasure from the operation of his farm, where he raises saddle horses and mules. His activities in this direction were recognized several years ago, when he was elected president of the Indiana Horse Breeders' Association. He is frequently called upon to act in the capacity of judge at fairs and horse shows held in different parts of the country.

Dr. Sigler takes an active interest in the civic affairs of Greencastle and is undoubtedly one of the best known veterinarians in the Hoosier State. With his pleasing personality and his experience as practitioner, consultant, teacher, breeder, judge, public speaker and association worker, it is believed that Dr. Sigler is splendidly prepared to take his place in the line with the other distinguished veterinarians who have been honored, from year to year, with the office of president of the A. V. M. A., the largest organization of its kind in the world.

CONVENTION NOTES

Dr. B. T. Simms, of Corvallis, was Oregon's sole representative at the meeting.

Dr. George E. Bamberger, of Reno, was the only Nevada member in attendance.

Dr. Gilbert S. Weaver, of Brookings, was the only South Dakota veterinarian to register at Lexington.

Dr. T. W. White, of Malad City, Idaho, was among those who traveled a consideracle distance to attend the meeting.

Dr. J. V. Knapp, state veterinarian, and Dr. G. E. Pace, of Marianna, represented the profession of Florida at the meeting.

Dr. L. E. Case, deputy territorial veterinarian of Hawaii, had the honor of traveling the greatest distance to attend the convention.

Dr. Chas. E. Cotton, state veterinarian, and Dr. J. G. Hardenbergh, of the Mayo Clinic, were the only Gopher veterinarians at Lexington.

Nine ex-presidents of the A. V. M. A. were in attendance: Mohler, Marshall, Cotton, Moore, Cary, White, Kinsley, Stange and Merillat.

Drs. David F. Fox, of Sacramento, and Thomas W. Healey, of San Jose, were the only representatives of the California profession at the meeting.

Dr. and Mrs. J. S. Donald, of Bay City, Mich., motored to Lexington and were among the first to arrive in the convention city. Their mileage was nearly 500.

Dr. Otto Bederke, of the Berlin Veterinary College, was favorably impressed with the way the meeting was conducted. Dr. Bederke is studying in the laboratories of the Bureau of Animal Industry, at Washington.

Dr. C. D. McGilvray, of the Ontario Veterinary College, and Dr. H. A. Eckert, of Sebringville, Ont., were the only Canadian veterinarians at the meeting. Dr. McGilvray and Dr. Eckert have attended seven consecutive A. V. M. A. meetings together.

Nine veterinary colleges were represented by their respective deans. These included Moore, of Cornell; Klein, of Pennsylvania; White, of Ohio; Stange, of Iowa; Richardson, of Georgia; Cary, of Alabama; Dykstra, of Kansas and McGilvray of Ontario.

Professor Franz Benesch, head of the Department of Obstetrics at the Veterinary School in Vienna, who has been at Cornell

University, under a traveling scholarship from the International Education Board, studying in the Department of Medicine, Obstetrics and Ambulatory Clinics, was elected to honorary membership in the A. V. M. A.

The members of the Army Veterinary Corps in attendance at the meeting included, Col. Ray J. Stanclift, of Fort Sam Houston, Texas; Lt. Col. Robert Vans Agnew, of Fort McPherson, Ga.; Maj. A. Mitchell, of Fort Oglethorpe, Ga.; Maj. Geo. H. Koon, of Fort Leavenworth, Kans.; Capt. R. I. Lovell, of Front Royal, Va.; Capt. Nathan M. Neate, of Jefferson Barracks, Mo.; and Captain C. B. Dunphy, of Fort Benning, Ga.

The following state veterinarians were in attendance: Bux, of Arkansas; Corwin, of Connecticut; Knapp, of Florida; Nye, of Idaho; Brown, of Indiana; Westmoreland, of Kentucky; Killham, of Michigan; Cotton, of Minnesota; Rafnel, of Mississippi; McNeal, of New Jersey; Moore, of North Carolina; Crewe, of North Dakota; Zimmer, of Ohio; Munce, of Pennsylvania; Lincoln, of Tennessee; Givens, of Virginia and Larson, of Wisconsin.

The following firms had exhibitions at the convention: Sharp and Smith, Abbott Laboratories, Fort Dodge Serum Company, H. K. Mulford Company, DeVine Laboratories, Haver-Glover Laboratories, Lederle Antitoxin Laboratories, Becton, Dickinson and Company, Pitman-Moore Company, Jensen-Salsbery Laboratories, Denver Chemical Mfg. Company, Vita Mineral Products Company, Shikles Brothers, Alexander Eger, Zell-Straub Laboratories.

SMOKER FOR VETERINARIANS

A smoker will be held at the Veterinary School of the University of Pennsylvania on Tuesday evening, October 12th, at 8 o'clock, for the veterinarians who may attend the annual meeting of the American Legion, to be held in Philadelphia October 11-16, or those who may be in the City at that time to visit the Sesqui-Centennial Exposition. All veterinarians who served in the World War are invited, whether members of the Legion or not, and no preliminary arrangements are necessary, but it will assist the committee in making adequate provisions if those who expect to be present will notify the chairman, Dr. Louis A. Klein, 39th St. and Woodland Ave., Philadelphia, Pa., at any time before the date of the smoker.

APPLICATIONS FOR MEMBERSHIP

(See April, 1926, JOURNAL)

FIRST LISTING

BAKER, CLIFFORD WARD — Sanford, Fla.
D. V. M., Georgia State College of Agriculture, 1925
Vouchers: A. G. G. Richardson, J. E. Severin and A. L. Shealy.

BARBER, OLIVER A. — Box 2321, Desoto Station, Memphis, Tenn.
D. V. M., Indiana Veterinary College, 1908
Vouchers: John H. Gillmann and H. W. Wilson.

BAUR, HENRY HILTON — Box 248, Monroe, La.
D. V. M., Chicago Veterinary College, 1920
Vouchers: Harry Morris and G. G. Graham.

BRYAN, JAMES MONROE — 1518 3rd Ave. N., Birmingham, Ala.
D. V. M., Alabama Ploytechnic Institute, 1923
Vouchers: C. C. Middleton and R. E. Jackson.

CAMPBELL, ALGIE EUGENE — Rantoul, Ill.
D. V. M., Chicago Veterinary College, 1915
Vouchers: H. Meade Hamilton and F. J. Muecke.

CAMPBELL, CLARENCE L. — 6033 E. Washington St., Indianapolis, Ind.
D. V. M., Ohio State University, 1926
Vouchers: C. C. Donelson, R. C. Julien and L. W. Goss.

CARPENTER, TOM — 2167 Santa Clara Ave., Alameda, Calif.
V. S., Ontario Veterinary College, 1888
Vouchers: F. W. Wood and C. M. Haring.

CASE, LEONARD NEWTON — 1338 Kapiolani St., Honolulu, Hawaii.
D. V. M., Cornell University, 1908
Vouchers: L. E. Case and P. H. Browning.

CILLEY, GEORGE CARROLL — Concord, N. H.
B. V. Sc., Ontario Veterinary College, 1926
Vouchers: Fay F. Russell and R. N. Smith.

COLE, EDWARD JACKSON — 40 Prospect St., Pawtucket, R. I.
M. D. C., Chicago Veterinary College, 1908
Vouchers: Thos. E. Robinson and John S. Pollard.

COYLE, MARTIN E. — City Health Dept., Greensboro, N. C.
D. V. M., U. S. College of Veterinary Surgeons, 1920
Vouchers: Wm. Moore and W. A. Hornaday.

CRAGO, JOSEPH V. — 714 Pleasant Ave., Warren, Ohio
D. V. M., Ohio State University, 1921
Vouchers: L. W. Goss and O. V. Brumley.

DALY, CLIVE — 1006 So. 12th St., Birmingham, Ala.
D. V. S., Kansas City Veterinary College, 1907
Vouchers: C. C. Middleton and R. E. Jackson.

DARLINGTON, PAUL B. — 405 East Main St., Chanute, Kas.
D. V. M., Kansas City Veterinary College, 1915
Vouchers: E. R. Steel, Wm. M. Bell and C. W. Bower.

DAVIS, A. B. — Box 155, Donalsonville, Ga.
D. V. M., Georgia State College of Agriculture, 1922
Vouchers: J. I. Handley and M. Jacob.

EMMITT, O. — 31 Exchange Bldg., Wichita, Kans.
D. V. S., Kansas City Veterinary College, 1906
Vouchers: C. W. Barnhart and F. D. Ketchum.

FAIRBANK, H. H. — 2131 Peasley St., Columbus, Ohio
V. S., Ohio State University, 1908
Vouchers: L. W. Goss and R. E. Rebrassier.

FINCH, CHARLES N. — 705 East Court Ave., Jeffersonville, Ind.
D. V. M., Indiana Veterinary College, 1914
Vouchers: T. A. Sigler and F. J. Muecke.

FINCH, CLYDE F. 419 State St., New Albany, Ind.
D. V. M., Indiana Veterinary College, 1915
Vouchers: T. A. Sigler and F. J. Muecke.

FLEMING, HERBERT V. 274 Delaware Ave., Dayton, Ohio
D. V. M., Ohio State University, 1920
Vouchers: L. W. Goss and O. V. Brumley.

FORSBERG, PHILIP P. Hobart, Ind.
D. V. M., Chicago Veterinary College, 1914
Vouchers: R. C. Julien and F. H. Brown.

GATES, DANIEL WOLF Howard, Pa.
V. M. D., University of Pennsylvania, 1925
Vouchers: S. M. Nissley and Ira Mitterling.

GIBBONS, WALTER J. 203 Auburn St., Ithaca, N. Y.
D. V. M., Cornell University, 1925
Vouchers: D. H. Udall and M. G. Fincher.

HANSON, NORMAN Stephen, Minn.
D. V. M., Ohio State University, 1920
Vouchers: H. H. Kernkamp and C. P. Fitch.

HARNDEN, EDWARD E. 617 Monroe St., Stillwater, Okla.
B. S., Oklahoma A. & M. College, 1912
D. V. M., Colorado Agricultural College, 1923
Vouchers: C. H. McElroy and H. W. Orr.

HEATH, SAMUEL P. 215 Western Ave., Allegan, Mich.
D. V. M., Grand Rapids Veterinary College, 1918
Vouchers: C. H. Clark and B. J. Killham.

HOOPES, HARRY ALLEN La Rue, Ohio
D. V. M., Ohio State University, 1914
Vouchers: Leonard W. Goss and Fred W. Miller.

KEPP, LOWELL JENNINGS Box 1533, Atlanta, Ga.
D. V. M., Chicago Veterinary College, 1917
Vouchers: J. I. Handley and M. Jacob.

KNAPP, JEAN VINCENT Box 445, Tallahassee, Fla.
D. V. M., Colorado Agricultural College, 1911
Vouchers: A. L. Shealy and Wm. E. White.

KRIFT, FRED A. Pemberville, Ohio
D. V. M., Cincinnati Veterinary College, 1915
Vouchers: H. E. Ash and L. W. Goss.

LAIRD, HUGH D. Whitehall, N. Y.
D. V. M., Cornell University, 1911
Vouchers: C. E. Hayden and P. A. Fish.

LATTA, WILLIAM RAYMOND Orangeburg, S. C.
D. V. M., Indiana Veterinary College, 1912
Vouchers: A. A. Husman and F. P. Caughman.

MCBRIDE, FRANK 262 William St., Tonawanda, N. Y.
D. V. M., Cornell University, 1922
Vouchers: Frank E. McClelland and Chester R. Perkins.

MCKINNEY, ROBERT G. Dryden, N. Y.
D. V. M., Cornell University, 1920
Vouchers: C. E. Hayden and P. A. Fish.

MCLENDON, WALTER FLOY Veterinary College, Athens, Ga.
D. V. M., Georgia State College of Agriculture, 1924
Vouchers: A. G. G. Richardson and J. E. Severin.

MARTIN, W. E. 108 W. Main St., Wapakoneta, Ohio
V. S., Ohio State University, 1906
Vouchers: L. W. Goss and R. E. Rebrassier.

MASSINGER, WESLEY Chalfont, Pa.
D. V. S., New York College of Veterinary Surgeons, 1892
Vouchers: C. J. Marshall and G. A. Dick.

MATTHEWS, PAUL L. 159 W. Frambes Ave., Columbus, Ohio
D. V. M., Kansas City Veterinary College, 1917
Vouchers: L. W. Goss and R. E. Rebrassier.

MELVIN, JAMES CLEVELAND Mayfield, Ky.
B. S., University of Kentucky
D. V. M., Alabama Polytechnic Institute, 1926
Vouchers: W. W. Dimock and C. A. Cary.

MILLER, VICTOR HENRY 534 Main St., Hamilton, Ohio
D. V. M., Ohio State University, 1924
Vouchers: Leonard W. Goss and O. V. Brumley.

NEATE, CAPT. NATHAN M. Jefferson Barracks, Mo.
D. V. M., Cornell University, 1917
Vouchers: Geo. H. Koon and A. T. Kinsley.

OLAFSON, PETER N. Y. State Vet. College, Ithaca, N. Y.
D. V. M., Cornell University, 1926
Vouchers: Wm. A. Hagan and P. A. Fish.

OSBORN, FRANK R. 915 Broadway, Little Rock, Ark.
D. V. M., Indiana Veterinary College, 1917
Vouchers: John H. Gillmann and H. W. Wilson.

OTTO, BENJAMIN FRANKLIN No. Main St., Camden, Ohio
D. V. M., Ohio State University, 1923
Vouchers: Leonard W. Goss and J. D. Grossman.

PACE, GUY EGDAR Box 162, Mariana, Fla.
D. V. M., Chicago Veterinary College, 1918
Vouchers: A. L. Shealy and W. W. Dimock.

PANGBURN, CHARLES F. Charlestown, Ind.
D. V. S., Grand Rapids Veterinary College, 1904
D. V. M., Indiana Veterinary College, 1909
Vouchers: L. E. Northrup and C. A. Miller.

PARENT, JOSEPH X. Foley, Minn.
D. V. M., McKillip Veterinary College, 1915
Vouchers: H. C. H. Kernkamp and C. P. Fitch.

POMEROY, BENJAMIN ADAMS 185 E. 8th St., St. Paul, Minn.
D. V. M., Montreal Veterinary College, 1882
Vouchers: H. C. H. Kernkamp and C. P. Fitch.

POWELL, ROYCE R. 6917 Carnegie Ave., Cleveland, Ohio
D. V. M., Ohio State University, 1909
Vouchers: L. W. Goss and O. V. Brumley.

PRICE, BENJAMIN 320 N. Matlack St., West Chester, Pa.
V. M. D., University of Pennsylvania, 1908
Vouchers: T. E. Munce and H. R. Church.

RIFE, CHARLES CORNELIUS 1039 Marietta St., Atlanta, Ga.
D. V. M., Cornell University, 1925
Vouchers: J. I. Handley and M. Jacob

SPRINKLE, WELCOME CLYDE 900A St. Clair Ave., East St. Louis, Ill.
D. V. M. S., Terre Haute Veterinary College, 1911
Vouchers: H. R. Schwarze, Robert Rives and T. A. Sigler.

STANSBURY, JAMES E. Athens, Ohio
D. V. M., McKillip Veterinary College, 1906
Vouchers: S. E. Hershey and Leonard W. Goss.

STEELE, FRED H. 307 E. Holmes St., Huntsville, Ala.
D. V. M., Alabama Polytechnic Institute, 1915
Vouchers: J. S. Andrade and C. C. Middleton.

STEIBING, CLARENCE CHRISTIAN 4520 7th St. N. W., Washington, D. C.
D. V. M., U. S. College of Veterinary Surgeons, 1923
Vouchers: E. M. Pickens and L. J. Poelma.

STEPHENSON, ROY LINDSAY 216 Elm St., Malone. N. Y.
D. V. M., Cornell University, 1909
Vouchers: P. A. Fish and C. E. Hayden.

STROHL, BERTIE L. 226 E. Madison St., Paris, Ill.
D. V. M., Indiana Veterinary College, 1908
Vouchers: G. H. Hines and B. H. Saxton.

THEOBALD, ARTHUR R. 1746 Hanfield St., Cincinnati, Ohio
D. V. M., Ohio State University, 1924
Vouchers: L. W. Goss and O. V. Brumley.

VAN DUZEE, GUY Lamberton, Minn.
D. V. M., Chicago Veterinary College, 1919
Vouchers: H. C. H. Kernkamp and C. P. Fitch.

WALKER, PRINTUS Lancaster, Ky.
D. V. M., Cincinnati Veterinary College, 1918
Vouchers: Geo. P. Isbell and J. H. Luallen.

WALSH, ROBERT MAXWELL 314 Capitol Bldg., Atlanta, Ga.
D. V. M., Kansas City Veterinary College, 1916
Vouchers: J. I. Handley and M. Jacob.

WEAVER, HERSCHEL J. Hagerstown, Ind.
D. V. M., Indiana Veterinary College, 1917
Vouchers: H. Meade Hamilton and F. J. Muecke.

WHITE, B. B. 2888 16th St., San Francisco, Cal.
D. V. M., Kansas State Agricultural College, 1920
Vouchers: J. P. Iverson and Rudolph Snyder.

WRIGHT, JESSE C. 1039 Marietta St., Atlanta, Ga.
D. V. M., Kansas City Veterinary College, 1911
Vouchers: J. I. Handley and M. Jacob.

ZEISSIG, ALEXANDER N. Y. State Vet. College, Ithaca, N. Y.
B. S., D. V. M., Cornell University, 1926
Vouchers: Wm. A. Hagan and C. E. Hayden.

Applications Pending

SECOND LISTING

Ayer, John, 231 W. 2nd St., Xenia, Ohio.
Burke, John W., Div. of Health, Chappel Bldg., Dayton, Ohio.
Carr, Frank L., 171 W. Oxford St., Alliance, Ohio.
Ebright, B. Norman, Mifflintown, Pa.
Elliott, H. O., Orland, Ind.
Failing, Geo. E., Paw Paw, Mich.
Hedges, N. D., New Capitol Bldg., Frankfort, Ky.
Howland, S. T., 19 Whidden Ave., Whitman, Mass.
Hutchins, Martin Luther, Rock Glen, Pa.
Miller, R. A., 964 No. Oxford St., Indianapolis, Ind.
Montfort, Ellis L., Morrisville, N. Y.
Paulish, W. F., Franklin, Ind.
Renfrew, James Robt., 1017 E. 15th St., Kansas City, Mo.
Talbert, Mellis Grant, Morristown, Ind.
Tyler, N. B., 320 Agricultural Bldg., Raleigh, N. C.
Wagner, Clifford C., 83 Fleck Ave., Newark, Ohio.
Woodward, G. T., Fallon, Nev.
Young, Samuel Taylor, Middleburg, Va.

REINSTATED

Chandler, Geo. H., Upper Sandusky, Ohio.
Doller, M. H., Danville, Ky.
Pedrick, C., 3001 Federal Drive, Tulsa, Okla.
Schwartz, John A., 3480 No. Keystone Ave., Indianapolis, Ind.

The amount that should accompany an application filed this month is $6.67, which covers membership fee and dues to January 1, 1927, including subscription to the JOURNAL.

COMING VETERINARY MEETINGS

New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. Sept. 1, 1926. Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.

San Diego-Imperial Veterinary Medical Association. San Diego, Calif. Sept. 1, 1926. Dr. W. G. Oliver, Secretary, 3821 Arizona St., San Diego, Calif.

Georgia State Veterinary Association. Atlanta, Ga. Sept. 8-9, 1926. Dr. Peter F. Bahnsen, Secretary, 121 State Capitol, Atlanta, Ga.

Chicago Veterinary Society. Great Northern Hotel, Chicago, Ill. Sept. 14, 1926. Dr. J. B. Jaffray, Secretary, 2956 Washington Blvd., Chicago, Ill.

Pennsylvania State Veterinary Medical Association. University of Pennsylvania, Philadelphia, Pa. Sept. 15-16, 1926. Dr. H. R. Church, Secretary, B. A. I., Harrisburg, Pa.

Indiana-Illinois Veterinary Medical Association. Washington, Ind. Sept. 17, 1926. Dr. Frank M. Tade, Secretary, Vincennes, Ind.

Kansas City Association of Veterinarians. New Baltimore Hotel, Kansas City, Mo. Sept. 21, 1926. Dr. J. D. Ray, Secretary, 400 New Centre Bldg., Kansas City, Mo.

Massachusetts Veterinary Association. American House, Boston, Mass. Sept. 25, 1926. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.

Massachusetts Veterinary Association. American House, Boston, Mass. Sept. 29, 1926. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.

Eastern Iowa Veterinary Association. Hotel Montrose, Cedar Rapids, Iowa. Oct. 13-14, 1926. Dr. John B. Bryant, Secretary, Mount Vernon, Iowa.

STATE BOARD EXAMINATIONS

Illinois Veterinary Examining Board. 130 No. Wells St., Chicago, Ill. Oct. 11-12, 1926. Superintendent, Board of Registration, Springfield, Ill.

The 1926 National Dairy Show will be held in Detroit, Mich., October 16 to 21.

THE ADDRESS OF THE PRESIDENT

By JOHN W. ADAMS, *Philadelphia, Pa.*

Again we are met in annual session, as provided by our Constitution. From far-distant parts of our great country and even from foreign lands we have come, having willingly laid aside our daily tasks and eagerly taken up the burdens and inconveniences of the journey.

Thoughtful men may well inquire as to the purpose and significance of this great voluntary gathering of men engaged in a science—the science of comparative medicine.

Are we a political organization aiming at personal preferment, power and pelf? Are we purely a social club of glad-handers, whose motto is "Eat, drink and be merry, for tomorrow we die?" If we are neither, what is it that draws us together and holds us fast? Is it possible that there can be some immaterial thing—some quality of mind or moral attitude toward whatever is, which has the power to awaken in us loyalty and reverence and a desire to associate with those like minded? There is one such attitude of mind common to all men of every race and clime, that all men recognize and revere. It is to be found in the sage and in the dullard, in prince and in pauper. This is the magnet that attracts us—the mystic bond that binds us together. This it was that gave our national society birth and only this will ensure its continued health. You know to what I refer. It is the desire for truth, the longing to delve more deeply into the mysteries of life, to glimpse some small part of Nature's plan and, perhaps, to understand.

If this be the purpose of this body—and who shall deny it?—if this be the conception of each of us and the goal toward which we strive, then our work is worth while and justifies itself in the eyes of men.

The past year has been kind to us. Industry in all lines has been active, wages have been high, unemployment low, prices even to the farmer fair and, more to the point, our domesticated animals have shown a commensurate increase in numbers, quality and value. Glanders and dourine are practically extinct. Rabies can be controlled. Contagious abortion is under intensive study and investigation and much has been learned as to its

*Delivered at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Ky., August 17-20, 1926.

cause, course and control. Tuberculosis in cattle, swine and poultry is engaging the attention of our foremost laboratory workers, sanitarians and breeders, and much has been learned of type, cultural peculiarities, modes of transmission, habitat and virulence of the tubercle bacillus. Area testing of cattle is slowly but just as surely eating away infected territory. The accredited-herd plan is finding favor with owners. In every branch of our varied activities, in every field of our endeavor, there has been more to do, at better compensation than ever before. As a whole our profession has been prosperous.

I have been told that at some place in the South the cotton-growers have erected a monument to the boll weevil because it brought prosperity by forcing the farmers to diversify their crops. It has been suggested that cattle, swine and poultry should club together and erect a monument to the automobile.

A Blessing in Disguise

Indirectly the motor car forced us to turn from the horse to our other species which had received scant consideration. Fortunately the new field has proved to be fruitful. The individual has "better blood" and is worth enough to justify considerable expenditure for veterinary service. I cannot but feel that our late unpleasantness has been a blessing in disguise—the best thing that could have happened, in that it brought to light unsuspected opportunities for usefulness.

We are rapidly adjusting ourselves to the new conditions imposed upon us. Few complaints have come from practitioners capable of rendering proper service.

'Tis true loud wails have come to our ears, particularly from the Corn Belt. In this section it is asserted that the county agent and the agricultural extension expert are not only doing veterinary work, but are instructing the farmer and the herdsman to do a variety of things which should be done by the veterinarian. Certain schools of agriculture have been charged with doing the same thing. We have heard that such practices have driven many veterinarians out of business, and are putting many imperfectly educated men—empirics—into the "business." This is serious "business," if actually true. It certainly is "business" and probably is not professional work of scientific grade. Let us consider what I believe are the facts.

As a class, farmers and breeders today are not uneducated. A large proportion of them are graduates not only of good high

schools, but also of schools of agriculture. Many of them are college men. Those who have not had these advantages have had opportunity of self-education through grange meetings, agricultural extension work and numerous, well-edited, farm and live stock publications. The live stock owner has learned considerable as to the nature of infection, modes of transmission, the danger of unclean hands and soiled instruments. He knows the price of gasoline, the cost of viruses and sera. Furthermore, he expects professional service of the highest grade, and he knows when he does not receive it. He expects to pay well for good service, but he knows when he is stung. What is the result of incompetent service, or competent service at exorbitant rates? The stock-owner naturally looks elsewhere for help. He asks aid of the county agent, or of the teacher of veterinary science in his state agricultural school. This is the story as I have had it, direct from several intelligent and honorable stock-owners in our central western states.

Failure to Cooperate

It is also true that some county agents, acting solely in an advisory capacity, have not received the hearty cooperation of the local veterinarian. Others have trespassed in the veterinary. domain, as a rule not for fees, but to be useful and appreciated It is also true that some teachers of veteriuary science are censurable for the manner in which they have presented certain medical subjects to laymen.

If it seems expedient to encourage the farmer to immunize his own hogs or do his own castrating or dehorning or attempt any other of the many measures which require unusual skill or rare judgment, and are therefore regarded as strictly the work of a trained veterinarian, the instruction should be every bit as searching as that given to a veterinary student working for his degree.

With such a view the farmer would respect the subject. He would realize the peril of his position and the inadequacy of his own knowledge.

"A little knowledge is a dangerous thing.
Drink deep, or taste not the Pyrrhean spring."

However, there is no cause for undue alarm. Veterinary science is not on trial. A few raiders occasionally cross our borders, but we either force them back or make them qualify for citizenship. There are occasional desertions to the camp of commercialism. I beg your pardon! "Desertion" is a harsh

term. These men do not desert, they simply go over into and become the owners and directors of an adjacent territory. They have been law-adbiding and useful citizens. They desire in their new home to retain our good will and to establish cordial commercial relations with us. In their home territory they raise some things we need, and many other things that may not hurt us, but which must be sold to us to balance the budget of the commercial territory and yield the required surplus. We supply the seed for all useful plants and the fertilizer for everything. These "dual purpose" men are not expatriated. They spend much time in our country; mingle freely with us; are accorded the chief seats at our council tables; are permitted to aid in moulding our policies and in maintaining inviolate our code of honor.

The commercial territory cannot hope to be annexed or incorporated within the domain of pure science. The fundamental principles of the two governments are unalterably opposed. The commercial territory will dicker. The domain of veterinary science cannot. Those of us who are members of this honorable body and are at the same time engaged in the sale of supplies to the profession as a means of livelihood are, to say the least, in an anomalous position. "No man can serve two masters."

Our Veterinary Colleges

The attendance upon our veterinary schools deserves some consideration. The freshman classes have shown a continuous, but very slow increase in size since 1920. Most schools are working at approximately 50 per cent capacity. The annual output is less than the depletion of the profession through death or other causes. Is veterinary science less attractive than ten years ago? Will freshman classes continue to shrink, or will they grow so slowly that some schools will become discouraged and close their doors? Are the causes of the slump in attendance demonstrable, and if so, how may the attendance be increased? These are questions frequently asked, but no well-informed person is cocksure of the correct answers.

Nevertheless, certain facts may be cited which shed at least a sidelight on the situation, and there are obvious deductions that are enlightening.

We hear that the veterinary schools of Germany, Austria, Russia, France and Italy are crowded as never before. In these countries, times are hard, and the laboring and middle classes have gone to work. In Germany and France the entrance require-

ments of the veterinary schools are much more exacting than in North America, competition between practitioners is keener, the number of animals per practitioner and their value much lower than in our country, yet more young men are adopting this profession than in more prosperous years.

It has been a current saying that in periods of business depression colleges and universities fill up, and when business is good, young men turn away from higher education and enter business. America is prosperous beyond precedent and yet its colleges and universities cannot accommodate the great crowds which clamor for admittance. We shall have to revise our former belief. Evidently general and technical education is now regarded as necessary for success in business. Yet, a large proportion of college men and women have no serious purpose in view. They choose the easiest courses and are content to slide through. It is now the custom, *la mode*, the proper thing, to go to college. Think of it! Four years of vacation at "the old man's" expense—football, track, fraternity, jazz! Rah! Rah! Only an occasional and trivial interruption by the professor.

Veterinary Medicine Not a Snap

For a "snap" the young man does not choose veterinary medicine. The college-going habit does not help us. Good times and an abundance of white-collar jobs, I believe, explain largely our small attendance. Of those now in veterinary schools a very considerable number are fitting themselves for small-animal practice, commendable and profitable, but, as the Irish laborer said of the bishop's work, "A nice, aisy, clane business."

I am not in favor of trying to sell the veterinary profession to young men. I doubt its wisdom and its success. The inexorable law of supply and demand will adjust matters in due time. I have heard no appeal for competition from veterinarians, nor for veterinary service from stockmen. If the latter need service which they cannot get, let them send their sons to a veterinary school.

Schools may close through meager attendance. In some ways and to some men this would be a hardship, yet to the profession, it might prove a blessing. We do not need more schools, but a few with superior equipment, comprehensive curricula and able and inspiring teachers. We must pay our teachers and research workers very much better salaries if we are to attract the best and provide the peace of mind requisite for the desired result.

By comparison with European countries we have too many schools attempting to turn out veterinarians. The ideal number for the United States would be four or five high grade, somewhat better equipped and manned than our best schools of today. One should be in the East, another in the far West, a third in the South and a fourth and perhaps a fifth in the Central West. Institutions not included might well undertake to give the first two years' work of the course prescribed by some one or all of the five major schools. You will readily appreciate the advantages of such a geographic distribution and the futility of the whole scheme.

The General Practitioner

And now, a few words to the general practitioner. He will be, for many years to come, the backbone of our profession in this country; the end-product of our educational system. I cannot hope to define his activities, nor lay down for him rules of conduct, nor point out any path that will surely lead to affluence, but I do desire to leave two thoughts with him.

The work of the physician has always been held in high esteem, because it deals with man, and human life is regarded as sacred. The veterinarian deals with brutes, soulless creatures, subservient to man, ministering to his wants, but occupying a distinctly lower plane and having no hope of a future life. This is the popular conception, and it follows that the veterinarian's work is held to be utilitarian and not humanitarian.

I have never accepted this distinction. I cannot bring myself te believe that there is any life that is not sacred. I consider all animal life sacred. An animal is conscious of self as an entity, a free individual. It has sensations, emotions, suffers bodily pain and experiences mental pleasure. We have voluntarily chosen a course of training which is designed to minister to the ailments of these dumb creatures. It is a noble work. Let us consecrate ourselves to it.

The second thought that I would leave with you is this: Ideal service gives more than it takes. It leaves a feeling of obligation in the mind of the recipient. Fortunately, ideal service is practical. It works. A well-satisfied client is a "booster" and an asset. When proper service is not appreciated, as is sometimes the case, there is no cause for despondency. The consciousness of having done the square thing is sufficient recompense. To act so as to make every client feel that he is the gainer by having employed you, should be your rule of conduct.

In conclusion, I wish to make a confession. A presidential address should deal with things which directly affect the life, strength and efficiency of the organization, and should propose well-considered plans and policies for future growth and guidance. This is the customary content of such an address. It is optimistic, laudatory and rather impersonal. It leaves us pretty well satisfied with ourselves, individually and as a group.

I realize that I have been irregular. I know too little of the American Veterinary Medical Association to dare offer any big constructive ideas, even if I had one. I see only dimly some of the big things our body could do. As a leader and guide in organization maneuvers, I am useless.

In one other respect I have been irregular. My conception of the American Veterinary Medical Association is the conception of a single veterinarian. True, there are 3600 of them, but to me, they are all exactly alike. They are identical. It has been said that "the study of mankind is the study of man." It is a self-evident fact, and it follows that the welfare of the veterinary profession is the welfare of the individual veterinarian. Imbued with the truth of this thought, my remarks necessarily have been personal, in some instances they have sounded rather harsh, but I wish to assure you that I have been profoundly sincere, without malice or prejudice and deeply sympathetic. I love the veterinary profession. It completely fills my being. It satisfies my noblest longings—all my soul's desires.

Education, culture, sincerity, probity, industry, sympathy, friendliness and reverence for the Divine Creator of all things are the golden stepping-stones by which we shall rise to the estate of usefulness and honor.

PERSONALS

Dr. A. J. Burley (Corn. '05), of Sheridan, Wyo., spent his vacation on a motor trip as far east as Ottawa, Canada, accompanied by his family. The party "did" both London and Paris (Ontario) in one day.

Dr. G. N. Cunningham (Chi. '18) has been reappointed Stephenson County (Ill.) Veterinarian for another year, with an increase of salary to $4000 per year. Under his new contract, Dr. Cunningham will be required to furnish all the supplies needed in connection with his work.

Dr. James G. McKee (A. P. I. '26) has selected West Lebanon, Ind., as a promising field for veterinary practice. While a student at the Alabama Polytechnic Institute, Dr. McKee was known as "The Man from Indiana." He was a member of the staff of entertainers for WAPI, the broadcasting station at Auburn, Ala.

A NOTE ON ONCICOLA CANIS (Kaupp), AN ACANTHOCEPHALID PARASITE OF THE DOG

By EMMETT W. PRICE

Department of Veterinary Pathology, Agricultural and Mechanical College of Texas, College Station, Texas

So far as known Acanthocephala appear to be rare in dogs. Only one species, *Oncicola canis* (Kaupp, 1909) Hall and Wigdor, 1918, has been reported from this host in the United States and but three instances of its occurrence have heretofore been recorded.

Kaupp (1909)[1] described this parasite as *Echinorhynchus canis*, from specimens collected by Dr. J. W. Parker from a dog at San Antonio, Texas, in 1902. Parker (1909)[2] discusses the clinical phase of the case and suggests the possibility of the coyote being the usual host. Hall and Wigdor (1918)[3] report a second occurrence of this parasite, based upon the examination of a specimen collected by Dr. C. C. Whitney, from a mongrel dog at College Station, Texas, March 8, 1917. Their study of this specimen enabled them to reclassify *E. canis* and ascribe it to the genus Oncicola Travassos, 1916. Van Cleave (1920)[4] notes a third occurrence of *O. canis*, from Lincoln, Nebraska. The specimen representing this case was collected from a dog by Dr. A. D. Brewer, in 1897, and placed in the collection of Professor H. B. Ward. This specimen had previously been referred to as *Echinorhynchus* sp., in a table of parasites by Ward (1897).[5]

So far as the writer is aware, no subsequent cases of infestation with *O. canis* have been reported. There have been, however, four additional cases of infestation found in dogs autopsied at College Station; it is, therefore, the chief object of this paper to report these cases and to describe the parasite in more detail than has heretofore been possible.

Case 1: While working over the collection of parasites in the School of Veterinary Medicine, a single specimen of *O. canis* was found which at first could not be accounted for. A careful review of the autopsy protocols of previous years showed that this specimen had been found by Dr. C. C. Whitney, in the intestine of a pointer dog, from Bryan, Texas, which had died with distemper, December 11, 1917.

Received for publication, May 6, 1926.

Case 2: On November 16, 1921, a Boston terrier was sent to the Veterinary Hospital, from Calvert, Texas, suffering with nephritis. This dog died five days later and was autopsied by Dr. R. C. Dunn. Upon examination of the intestine, nine specimens of Acanthocephala were found which were subsequently identified by the writer as *O. canis.*

Case 3: On January 4, 1922, a Walker hound was sent to the College, from San Antonio, Texas, to be treated for sarcoma of

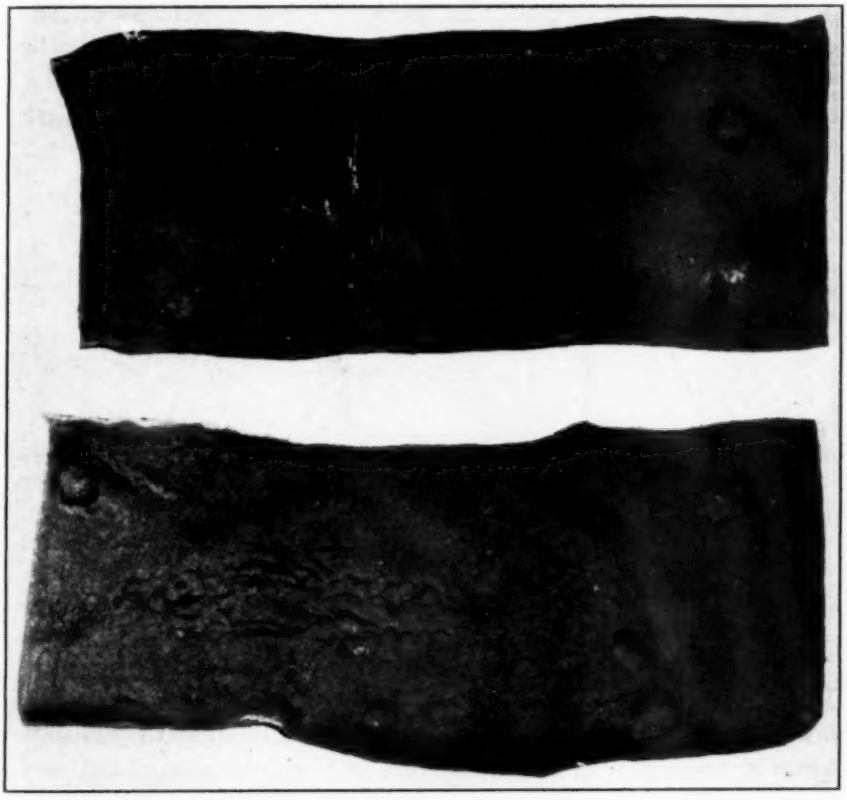

FIG. 1. Portion of ileum from case 3 showing *Oncicola canis* attached to mucous membrane. (Natural size.)

the penis. An operation was performed but due to loss of blood the animal died a few days later. An autopsy was performed and thirty-five specimens of *O. canis* were found firmly attached to the mucous membrane of the ileum (fig. 1).

Case 4: On February 26, 1926, a black and white pointer male was received at the Veterinary Hospital, from Lufkin, Texas. This animal showed the following symptoms: tempera-

ture, 102.4° F.; discharge from eyes and nose, poor appetite, weakness of the posterior limbs, and tucked-up abdomen. When walking the dog showed a tendency to squat, which probably indicated some abdominal pain. A diagnosis of distemper was made and treatment instituted. Pneumonia later developed and the animal died, March 25. An autopsy was conducted by Mr. A. V. Young, a senior veterinary student, who found lesions of pneumonia. In the intestine, twenty-seven specimens of *O. canis* were found attached to the anterior part of the ileum. There were also present a few specimens of Ancylostoma and Dipylidium.

The following description of *Oncicola canis* is based upon a study of toto-mounts, dissections and serial sections of mature males and females.

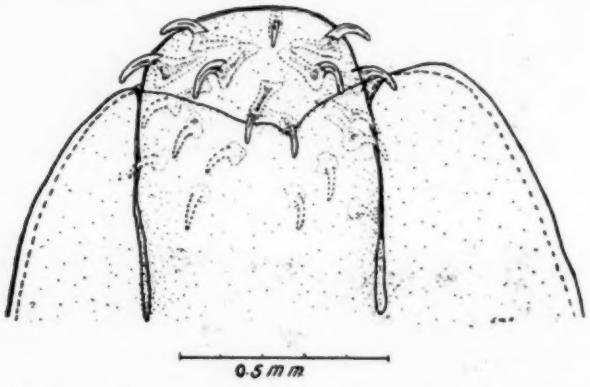

FIG. 2. *Oncicola canis*. Anterior extremity showing distribution of hooks.

The body is flattened, somewhat wrinkled, dark gray in color. The body-form is essentially that figured by Kaupp (1909), being conical in shape and gradually tapering toward the posterior extremity. The anterior end is abruptly attenuated and the proboscis usually retracted. The cuticle, except for wrinkles, is smooth and devoid of spines. In toto-mounts about 90 circular muscular bands may be seen, which gives the body an annulated appearance. The proboscis (fig. 2) is rounded anteriorly, slightly constricted posteriorly, to form a short neck, and measures 0.7 to 0.8 mm. in length and about 0.5 mm. greatest diameter. Hall and Wigdor (1918) state that the proboscis is 2 mm. long. Their measurement apparently is from the tip of the proboscis to the base of the proboscis receptacle. The proboscis is armed with six alternating rows of six hooks each; those of the first four

rows are tenioid while those of the posterior rows are shaped somewhat like a rose-thorn (fig. 3). The hook measurements are given in the following table:

Row	Distance from tip to apical root in microns	Distance between root extremities in microns
1	190-210	120-150
2	190-210	140-150
3	175-200	120-140
4	160-180	80-100
5-6	110-120	——

The proboscis receptacle is a cylindrical, double-walled sac, attached at the base of the proboscis, and is 0.9 to 1 mm. long. The central nervous system or brain is an oval mass of ganglion cells, 0.25 mm. long and 0.15 mm. wide, located in the proboscis receptacle, about 0.55 mm. from its base. The lemnisci are sub-

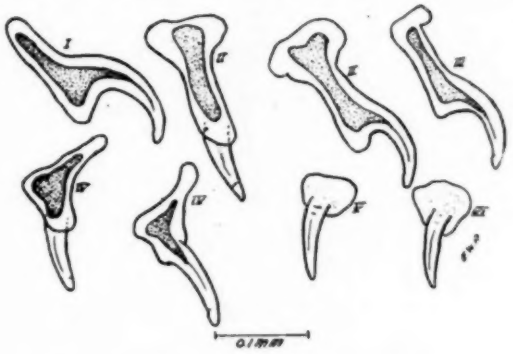

Fig. 3. *Oncicola canis*. Hooks from proboscis. Numerals indicate row.

cylindrical, long and slender, extending to or slightly beyond the posterior fourth of the body in the male and almost to the posterior extremity of the body cavity in the female.

Male, 6 to 13 mm. long by 2 to 4 mm. maximum width. Copulatory bursa, when extruded, is bell-shaped, 1.5 mm. long by 1.75 mm. wide, the free edge of which presents a ruffled or fluted appearance. Testes are oval in shape, 1.8 mm. long by 0.95 mm. wide, and are located in the anterior half of the body. The cement-gland lies immediately behind or, in some specimens, slightly overlaps the posterior testis and is composed of eight large globular cells forming an oval mass, 2 mm. long by 1.85 mm. wide (fig. 4).

Female, 7 to 14 mm. long by 2 to 4 mm. maximum width. Genital orifice terminal. The genital apparatus, consisting of a uterine bell or selective apparatus, uterus, and vaginal sphincter or ovejector, is located in the posterior extremity of the body

cavity (fig. 5). The uterine bell or selective apparatus is an urn-shaped structure, about 0.8 mm. long, at the base of which is located a mass of large cells. The ova are passed into this organ from the body cavity and those which are mature are passed into the uterus, which is a spindle-shaped, muscular organ, 0.6 mm. long by 0.175 mm. wide. Immediately behind and continuous with the uterus is located the sphincter, or what should be properly called an ovejector. This organ is composed of large muscular cells and has a total length of about 0.15 mm. Its

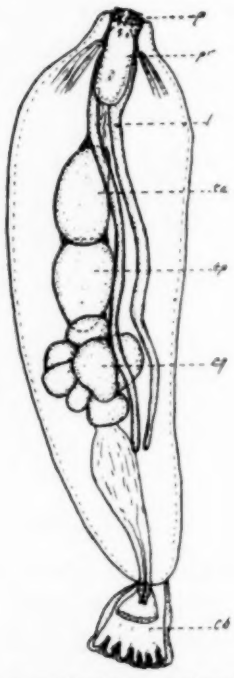

FIG. 4. *Oncicola canis*. Male. p., proboscis; pr., proboscis receptacle; l., lemnisci; ta., anterior testis; tp., posterior testis; cg., cement gland; cb., copulatory bursa.

function is to force the ova through the genital orifice. The ova or hard-shelled embryos (fig. 6) fill the body cavity of the gravid female. They are oval in shape, brown in color, 60 to 70 μ long by 40 to 50 μ wide and, when mature, contain an embryo, the anterior end of which is armed with several, apparently six, large spines and a number of smaller ones. The body proper is also covered with a large number of minute, slender spines.

The life history of this parasite is not completely known. Van Cleave (1920),[4] in establishing the identity of acanthocephalid larva collected by Dr. Albert Hassall from the nine-

banded armadillo, in Texas and Washington, D. C., has shown that the armadillo serves as an intermediate host for *O. canis*. This fact explains the apparent limited distribution of this species, since the range of the nine-banded armadillo (*Dasypus novemcinctus*) in the United States, as given by Pratt (1923),[5] is southern Texas and New Mexico. The occurrence of *O. canis* at Lincoln, Nebraska, is unusual, but in the light of our present knowledge concerning the life history of this species (there is no information available as to whether the animal was of local

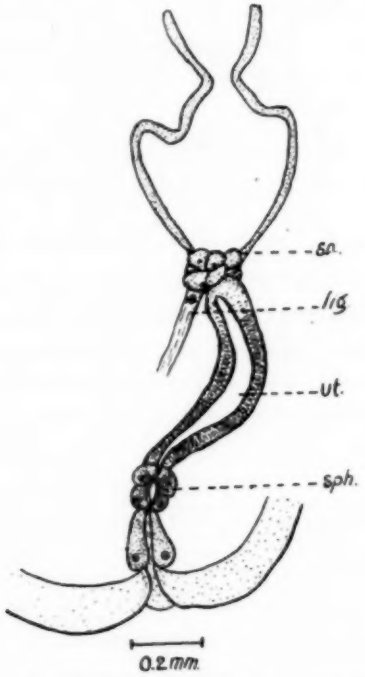

FIG. 5. *Oncicola canis*. Genital tract of female. sa., selective apparatus; lig., retractor ligament; ut., uterus; sph., sphincter or ovejector.

origin or not), it appears reasonable to assume that this dog was originally from the South, probably from Texas. It is, at any rate, interesting to note that, with the exception of the Nebraska case, all reports of the occurrence of *O. canis* have been from Texas dogs.

In none of the cases reported were any symptoms shown that, in the writer's opinion, could be construed to indicate an acanthocephalid infestation. In each of the cases found by Whitney, and in the Nebraska case, only a single specimen was present; in the case in which twenty-seven specimens were found, the

animal showed clinical symptoms of distemper; one animal died as the result of a surgical operation, and one with nephritis. The only case showing an extremely heavy infestation (about 300 specimens), reported by Parker, apparently died of rabies. In this case the symptoms noted were "great exhaustion, altered voice, dropping of jaw, dribbling of saliva, tucked-up abdomen, frenzy and vicious aggressiveness, muscular incoordination," which are, as he states, "strongly indicative of rabies." The further fact that "the dog died after twenty-four hours, with continued frenzy and progressive paralysis, unable to eat or

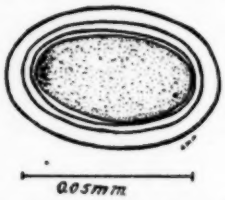

FIG. 6. *Oncicola canis*. Ovum or hard-shelled embryo.

drink, during which time he tore up a rug and a burlap sack given him for bedding" is also strongly indicative of rabies. Although Parker states that the brain was "normal microscopically," rabies cannot be definitely excluded, since apparently the microscopical examination was not confirmed by animal inoculation.

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SWINE SPECIALISTS

The following ad recently appeared in the Edgerton (Minn.) *Enterprise:*

EDGERTON
RENDERING WORKS
Will haul away your
DEAD STOCK
Free of Charge
Special Attention Given to Hogs.
Phone us at our Expense.
JOHN T. VANDEN BOSCH.
Propr.

Looks as though there might be a good opening for a veterinarian around Edgerton.

ANAPHYLAXIS AND THE TUBERCULIN REACTION*

By M. DORSET, *Washington, D. C.*

Chief, Biochemic Division, Bureau of Animal Industry,
U. S. Department of Agriculture

The fact that some individuals are abnormally sensitive when brought into contact with certain substances has long been known. Some are made violently ill by eating certain foods, while the great majority of persons may consume the same foods without any observable ill effects. Some individuals develop symptoms of hay fever or asthma upon being exposed to the pollen of plants, although the average person is unaffected. The tuberculin test is based on the observation that tuberculous animals are sensitive and react to tuberculin, which is without effect on normal animals. Notwithstanding the rather common occurrence of such idiosyncrasies, their true significance was not appreciated until after the important reports of Richet and his collaborators. This French investigator, while conducting experiments with extracts from eels and other marine animals, found that although his extracts were poisonous in large doses they were without effect when the dose was reduced.

However, when this minute dose, without effect upon normal dogs, was administered to dogs which had received a previous injection of the same thing, the result was violent illness and often death. Recognizing that the first injection had rendered dogs susceptible to what would otherwise have been a harmless dose of this material, Richet proposed for this condition the name "anaphylaxis," to signify a condition directly opposed to "prophylaxis." Shortly after this, Dr. Theobold Smith noticed that guinea pigs, which survived in his tests of diphtheria antitoxic serum, developed remarkable sensitiveness to later injections of normal horse-serum.

These fundamental observations, made about the year 1904, served as a basis for extensive and varied researches concerning all kinds of hypersensitiveness which were, at first, grouped under the name "anaphylaxis," and such conditions as hay fever and tuberculin sensitiveness, as well as the various food idiosyncrasies, were included under that name. However, as our knowledge increased it came to be evident that all forms of

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hypersensitiveness are not identical and strenuous controversies arose, not alone concerning the causes and mechanism of the various states of hypersensitiveness but even with respect to the nomenclature to be used in describing these conditions. Even to this day there is lack of agreement with respect to the terminology; with respect to the relationship of the different observed conditions to each other; and with respect to the precise manner in which the characteristic symptoms are brought forth.

Forms of Hypersensitiveness

I have no intention of entering into a discussion of the various theories that have been advanced by the many able workers in this field. I wish merely to refer very briefly to the classification of different forms of hypersensitiveness and then to discuss more particularly what we know about the mechanism of anaphylaxis and of the tuberculin reaction.

We may divide hypersensitiveness into two main groups, as follows:

The *first group* includes all cases of hypersensitiveness. Here we have merely an increased susceptibility to the normal action of a substance and the production of the same symptoms as would appear in normal individuals upon the administration of larger doses. Examples of this are seen in the greater effect of coffee, alcohol, or tobacco upon some individuals than upon the majority. The kind of effect is the same for all individuals, the only difference lying in the amount of the substance required to produce the same effect.

The *second group* is of a wholly different nature. It includes all those cases in which the administration of a drug, a serum, or other substance gives rise to a series of symptoms which have no relation whatever to the normal action of such a substance and which can not be called forth in normal individuals, no matter what dose is used.

In this class of cases, then, we have to do with a condition which is changed from the normal. To express this changed condition von Pirquet used the term "allergy," meaning changed or altered reaction, and, though this term has been employed by some authorities in a much more restricted sense, we will commit no serious error if we use the word "allergy" to express all forms of changed reaction capacity.

Now, if we examine the various states of allergy we find them differing tremendously among themselves, and caused by a

great variety of dissimilar substances. Are all of these allergic conditions essentially the same? Are they brought about by essentially the same mechanism in the animal body?

These questions may be best considered by reverting for a moment to that condition which by common consent is known as "anaphylaxis." Following the early reports of Richet and of Smith, it was proved conclusively by Rosenau and Anderson, and others, that guinea pigs could be rendered highly susceptible to protein substances by extremely minute doses of those substances, for after being so injected they would, after a time, become violently ill or die if injected with quantities of the same protein which were entirely without effect upon normal animals. These reactions are highly specific. An animal sensitized to a given protein is sensitive to that protein only and not to any other. The symptoms of anaphylaxis are of a "shock-like" character and are the same in the same species of animal, regardless of the particular protein used. Guinea pigs exhibit sudden and characteristic symptoms of dyspnea, and after death the lungs are found to be fully expanded. The symptoms are believed to be due to a spasm of the smooth muscles of the smaller bronchioles. The sensitiveness may be transferred to normal animals by transfusion, provided a certain interval is allowed to elapse between the transfusion and the injection of the specific antigen. Sensitized animals may be desensitized by injections of a sublethal dose of the specific antigen. Such a condition is called "antianaphylaxis." The sensitiveness established by protein injection may be transferred from the mother to the offspring, but this is merely a temporary, passive sensitiveness which disappears within a few weeks after birth and seems to be quite different from that form of sensitiveness to plant pollens which is so frequently observed in certain families. Finally, with respect to anaphylaxis it should be noted that this state may be brought about by *antigenic* substances only. Only those substances which are capable of bringing about the formation of antibodies, when injected into animals, can give rise to the condition of anaphylaxis.

As to the *mechanism* of the *anaphylactic phenomenon*, we can say with a considerable degree of confidence that it is a reaction of an antibody with an antigen, that the reaction takes place within or upon the cells of the body and not in the blood-stream, and that the resulting symptoms are probably not caused by the setting free in the blood of a poisonous substance (anaphyla-

toxin) as a result of a cleavage due to the union of antibody and antigen. It appears, however, that such a reaction upon or in the body cells, either by the formation of a toxic substance there, or perhaps merely by mechanical irritation, is the cause of the symptoms which we know as "anaphylaxis."

Relation of the Tuberculin Reaction to Anaphylaxis

It would take us entirely too far afield to attempt even a cursory discussion of such interesting conditions as hay fever, drug hypersensitiveness, food idiosyncrasies, etc., which in many respects differ from the classical anaphylactic state. I therefore shall proceed directly to the main purpose of this paper, which is to consider the mechanism of the tuberculin reaction.

Is it a manifestation of anaphylaxis, or is it a separate and distinct form of allergy?

Long before such things as anaphylaxis and allergy were dreamed of, efforts were made to explain the tuberculin reaction. The original conception of Koch was that tuberculin contained certain specific bodies capable of causing necrosis of tissue cells and that it was particularly active against those tissues which were saturated with the toxins of the tubercle bacillus. Injection of tuberculin into a tuberculous animal caused greatly increased necrosis of the cells of the tuberculous tissue and absorption of this necrotic material gave rise to a systemic reaction.

The Koch theory however does not fit in with the known fact that the most advanced cases, and therefore those with tissues most highly saturated with the toxins of the tubercle bacillus, are the least likely to react, whereas, early cases, with the slightest imaginable lesions, may give the most pronounced reactions.

Another suggested explanation of the tuberculin reaction has been that it is an antibody-antigen reaction; that the cells surrounding the tubercles acquire an increased attraction for the toxin which, being concentrated around the lesion, causes increased activity of the lesion and therefore a reaction. This hypothesis, however, does not serve to explain the intradermal, ophthalmic, and other local reactions which certainly do not seem to result merely from increased activity of the tuberculous foci.

As has already been stated, it has been maintained by many that the tuberculin reaction is an example of anaphylaxis, yet

it presents marked differences from true anaphylaxis, in two important respects.

First of all, tuberculin sensitiveness can not be produced with tuberculin. If tuberculin were a true antigen, such as serum, egg albumin, and other whole proteins, it should produce the characteristic hypersensitiveness to itself just as do the true antigens.

In the second place, it is very questionable whether passive sensitization to tuberculin, that is, transference of sensitiveness from sensitive to normal animals, as in true anaphylaxis, is possible, although some investigators have claimed to have accomplished it.

If, however, we examine more closely into these differences from true anaphylaxis we find that it is not possible definitely to deny that the tuberculin reaction is a species of anaphylaxis. Not long ago it was maintained that tuberculin sensitiveness (local reactions) developed only in the case of tuberculous infection. We know now that it can be produced with dead tubercle bacilli, though the degree of sensitiveness (in guinea pigs) seems to be less than in cases of infection with the living bacilli. The sensitiveness to tuberculin of guinea pigs treated with dead bacilli seems to indicate clearly that tuberculin must contain some derivative of the cell protoplasm of the tubercle bacillus and that such derivative is so combined, in the bodies of the bacilli, that the compound is antigenic, that is, capable of rendering guinea pigs susceptible, not alone to the compound as it exists in the bodies of the bacilli, but probably to any related compounds containing the specific reacting principle, which is in the tuberculin and which exists there is such a form that it can bring forth a reaction but cannot induce a state of sensitiveness.

If such a supposition were true it would mean merely that in tuberculosis, while a whole protein or a true antigen, as in anaphylaxis, perhaps is required to produce the state of allergy, the sensitiveness which results is directed not toward the compound as a whole but to a special portion or radical of it, and that other compounds containing the same radical or perhaps even the specific radical alone are capable of eliciting a specific response. Such a thought is not wholly without basis, for Landsteiner has been able to make compounds of protein and amino-acids, and to produce specific sensitiveness with them. He was able, moreover, to show that the sensitiveness was not against the compound as a whole nor against the protein portion of it, but

rather against the specific amino-acid which he employed. His animals became sensitive to all compounds containing the specific acid, but not to the same protein combined with other acids.

In conclusion, I think we are justified in regarding the mechanism of the tuberculin reaction as being much like that of "anaphylaxis." The infected animal becomes sensitized by the continuous production of the specific antigen in its body. The antibodies thus produced become attached to certain body cells. Upon the injection of tuberculin into such an animal the antibodies unite with the specific radical in the tuberculin, and such union, either by mechanical irritation or by resultant toxinformation, causes the inflammatory condition which we call a "*local reaction*," or the more generalized symptoms, as the case may be.

BUREAU TRANSFERS

Dr. S. J. Walkley (McK. '07), from Chicago, Ill., to Milwaukee, Wis., on meat inspection.

Dr. Geo. A. Posse (Colo. '24), from Topeka, Kans., to Lincoln, Nebr., on tuberculosis eradication.

Dr. W. K. Breckenridge (O. S. U. '04), from Ottumwa, Iowa, to Wheeling, W. Va., on meat inspection.

Dr. C. P. Branigan (Chi. '07), from Wheeling, W. Va., to New Orleans, La., on meat inspection.

Dr. R. M. Williams (K. S. A. C. '24), from National Stock Yards, Ill., to Kansas City, Kans., on meat inspection.

Dr. Norman C. Wheeler (Chi. '11), from Chicago, Ill., to National Stock Yards, Ill., on meat inspection.

Dr. Edward J. Drake (K. C. V. C. '06), from Pierre, So. Dak., to Lincoln, Nebr., on tuberculosis eradication.

Dr. Frank C. Swaney (Chi. '08), from Lincoln, Nebr., to Omaha, Nebr., on meat inspection.

Dr. G. P. Rebold (Cin. '09), from Berkeley, Calif., to Omaha, Nebr., on virus-serum control.

Dr. W. J. Stewart (Nat. '94), from Berkeley, Calif., to Stockton, Calif., on virus-serum control.

Dr. W. Clyde Mitchell (U. S. C. V. S. '04), from Sacramento, Calif., to Denver, Colo., on meat inspection.

Dr. Theo. R. Morse (St. Jos. '23), from Chicago, Ill., to St. Louis, Mo., on meat inspection.

Dr. Roy R. Parker (K. S. A. C. '19), from Chicago, Ill., to Fort Worth, Texas, on meat inspection.

Dr. W. K. McConnell (K. C. V. C. '11), from Natchez, Miss., to Fort Worth, Texas, on meat inspection.

Dr. Robt. C. Dickson (K. C. V. C. '18), from Chicago, Ill., to Charleston, W. Va., on tuberculosis eradication.

Dr. Henry S. Thompson (McK. '10), from Austin, Minn., to Cincinnati, Ohio, on meat inspection.

Dr. Fred E. Davis, from Baltimore, Md., to Washington, D. C., on meat inspection.

Dr. Edgar Heiny (Ind. '08), from Jackson, Miss., to Birmingham, Ala., on tick eradication.

Dr. C. F. Stroehlein, from St. Louis, Mo., to Toledo, Ohio, on meat inspection.

POULTRY DISEASE CONTROL*

By F. A. LAIRD, *Chief Veterinarian,*

State Department of Agriculture, Springfield, Illinois

In accepting the invitation of your secretary to appear on this program, I have been guided by the thought that some of the important problems encountered in Illinois, in the field of poultry pathology and hygiene, may be of interest to veterinarians in adjoining states.

A brief survey of the situation shows that many poultry diseases have increased with the development of the farm flocks throughout the Middle West. The problems in Illinois are, therefore, in a sense, your problems. Our increased poultry wealth has not been accomplished without the disadvantage of the disease complex which appears with increase in numbers in a given area. At this time, veterinarians and sanitarians are confronted with innumerable questions which require a definite knowledge regarding the theory and practice in poultry pathology. The lack of sanitary measures has been an important factor which confronts the veterinarian and it must be admitted that some veterinarians do not appreciate the important field of poultry practice.

In Illinois, the farm flocks, according to the latest census, represented an investment of $30,000,000, while the annual output of meat and eggs, according to available figures, amounts to $68,000,000 annually. This valuable industry, as composed of small units, probably suffers more from mismanagement and neglect than any other branch of the live stock industry in America. The future of the poultry industry is largely dependent upon the success attained in controlling diseases. In solving the poultry-disease problems, veterinary practitioners are approaching a responsibility that is testing the skill of the veterinary profession and compelling individual practitioners to increase their store of knowledge.

In advising the poultrymen regarding the control of disease, it must be pointed out, first of all, that it is more economical to prevent disease and maintain health than to cure sick fowls. The individual fowl is of comparatively small value and attention must be focused on the flock. The essentials of poultry hygiene

*Presented at the thirty-third annual meeting of the Missouri Valley Veterinary Association, Kansas City, Mo., July 27-28-29, 1926.

and sanitation, in their relation to the maintenance of health, should be pointed out on every occasion. Since the purchase of eggs and breeding stock has probably been the most important single agency in disseminating different diseases of poultry, it must be recognized that disease on may farms has followed the purchase of breeding stock. Diseases thus introduced have found a fertile field through neglect of sanitation, improper houses and faulty feeding. These and other factors favoring lowered vitality are often the background of specific diseases which we are called upon to combat.

Sanitation and Hygiene are Fundamentals

The prevention of poultry diseases on many farms must therefore deal with fundamentals in sanitation and hygiene. To neglect the part played by these important factors is to ignore the basic problems with which we, as a profession, are concerned. The important problems of disease prevention must be handled without thought of medicine. Stated in another way, we must first be sanitarians in dealing with avian pathologic problems, in order to be successful. Clean ground, for example, is not a matter of a medicinal prescription but one of rotation and management. A sanitary, dry house implies proper ventilation. Dirt floors must be supplanted by board or concrete structures subject to cleaning and disinfection. These and other essentials in maintaining health can be pointed out by the veterinary profession to protect the interests of agriculture and in so doing a confidence can be built that is essential to the growth of the profession.

Feeding practices in many flocks are faulty and frequently responsible for lowered vitality as well as lowered production.

Every practitioner should acquaint himself with the rations best suited to his locality and urge their adoption in connection with the management of the flock. We must, also, familiarize ourselves with the nutritional diseases and become acquainted with state poultry extension agencies and glean from them the important points in culling, feeding and housing problems. In all of these essentials in poultry management, the veterinarian can be of distinct service, providing he equips himself with information.

Poultry diseases encountered by the veterinarian are numerous. In this brief discussion, I shall limit my remarks to bacillary

white diarrhea and avian tuberculosis and attempt to present some of the salient points in their control.

Bacillary White Diarrhea

The increasing loss from bacillary white diarrhea has attracted attention in Illinois and other states in recent years. Investigations made at the University of Illinois Laboratory of Animal Pathology and Hygiene have furnished evidence to show that an important percentage of the loss encountered in baby chicks is traceable to bacillary white diarrhea. These bacteriologic findings confirm the original investigations of Rettger, of Connecticut, and others, though it is conceded that for many years veterinarians and sanitarians of the Middle West have been negligent in arresting the spread of the disease. Following the failure of remedial measures in bacillary white diarrhea, the most hopeful control procedure has centered about the removal of mature infected fowls from the flock, supplemented by a sound program of poultry sanitation. To this end, the State Department of Agriculture of Illinois has recognized the agglutination test made at the University and prescribed rules and regulations to guide the practitioner and poultryman.

The state rules employed during the past three years are briefly enumerated as follows:

1. A bacillary white diarrhea-free accredited flock of chickens is one in which the entire flock has passed two successive annual or three successive semi-annual physical examinations and agglutination tests, and in which the flock is maintained under sanitary conditions.

2. Stock hatched from accredited flocks of poultry and reared on a farm where no other chickens were hatched and reared are eligible for accreditation if tested and found free from bacillary white diarrhea.

3. Following testing and removal of reactors (leg-bands of reacting chickens to be sent to the State Veterinarian), the premises must be cleaned and thoroughly disinfected under proper supervision.

4. Leg-bands for identifying chickens and sterile vials are furnished for official testing by the Laboratory of Animal Pathology and Hygiene, University of Illinois, Urbana, upon application by a veterinarian.

5. A fee of five cents per sample is charged for the agglutination test, while an authorized veterinary fee of five cents per

sample is charged by graduate veterinarians for collecting samples, removing reactors, advising regarding the disinfection of premises, and inspecting the sanitary conditions of the poultry-yards.

6. The State Department of Agriculture reserves the right to retest any bacillary white diarrhea-free accredited flock at the expense of the owner.

7. Flock owners complying with the above regulations, upon sworn affidavit of the local veterinarian regarding the sanitary conditions of the premises, will receive an official certificate of the Department of Agriculture accrediting the flock as being free from bacillary white diarrhea, signed by the Chief Veterinarian of the State Department of Agriculture.

In a new project of this character, there is always some doubt regarding the practical phases of its application, but after three years of experience, I can commend the Illinois plan, or some modification of the Illinois plan, to your serious consideration. In all we have had 197 practitioners who have participated in the campaign of bacillary white diarrhea control, in collecting the blood samples and carrying out the instructions of the State Department of Agriculture regarding the disposition of reacting fowls and disinfection of premises.

The farmers and poultrymen of the State have paid for the veterinary and laboratory services and expended, under our direction, a sum of over $15,000 over a period of three years, in attempting to eliminate this disease from their flocks. I will not attempt to burden you with details, but it may interest you to mention that definite progress has been made in the control of the disease. Four flocks are officially recognized by the State Department of Agriculture as free from the disease and 26 other flocks are on the verge of official recognition. The recognition given is important, but the livability of chicks in tested flocks is the momentum that has made this project a success. In this connection, it is important that we acknowledge that the test is not 100 per cent efficient, but we no longer feel justified in condemning the test on its limitations. The latter are problems for laboratory investigators to solve.

Practitioners Make Agglutination Tests

The testing of blood-samples has increased to such proportions that, in Illinois, it can no longer be dispatched at one central laboratory. To meet this emergency, the agglutination test will be placed in the hands of practitioners who are qualified, pro-

viding their work is acceptable to the State Department of Agriculture.

The laboratories engaged in this work will be accredited by our department, though the test employed must be dispatched in keeping with recommendations made by the University laboratory.

In connection with the agglutination test, it has been decided temporarily to try the pullorin test which the University is investigating. This test will be kept in the hands of accredited and specially-trained veterinarians. The pullorin-tested flocks will probably be limited to those supplying eggs to hatcheries, with the distinct understanding that the University, in furnishing the pullorin and the State Department of Agriculture in recognizing its use, regard the test as in the experimental stage at this time. The same understanding must prevail with the hatcherymen, flock-owners and veterinarians.

The results of the pullorin test in State-owned flocks last year were encouraging, while two or three hatcheries, that used the experimental pullorin, on over 20,000 chickens under the direction of the University laboratory, have commented favorably on the test and plan to continue it another year. It is too early to draw conclusions on the value of experimental pullorin, notwithstanding that Ward and Gallagher described this test several years ago.

Avian Tuberculosis

Avian tuberculosis in relation to tuberculosis in other animals is a direct outgrowth of the program of eradicating tuberculosis in cattle and swine. It is significant that in the last ten years our ideas have changed regarding the importance of suppressing this disease and each year the presence of the disease in poultry is being more appreciated. It is scarcely necessary at this time to mention the important investigations of the Illinois and Nebraska stations, which have definitely linked tuberculous retentions in swine with the avian type of the disease. More recently, that results of investigations at the Illinois Station show avian tuberculosis may sometimes find root in young calves. The lesions of avian tuberculosis in calves, as the result of contact exposure with tuberculous fowls, are localized in character, while infected animals react to the intradermal tuberculin test. More consistent reactions are apparently obtained with avian than regular Federal tuberculin, in calves

sensitized to or infected with the avian strain of the disease. These findings are of sufficient importance to justify keeping tuberculous poultry separated from cattle and other animals. To cope with this situation in the field, county veterinarians and accredited practitioners of Illinois have recently been instructed by the Director of Agriculture to survey every farm where cattle are tested, for the presence of avian tuberculosis.

In accredited counties and probably some other localities of the State, definite measures are being devised to suppress avian tuberculosis and it is hoped that out of these preliminary trials that some plan will be evolved whereby avian tuberculosis may be effectively suppressed.

In many localities of the Middle West, avian tuberculosis is probably one of the most serious phases of animal tuberculosis control and it is but a question of time until measures for the control of this disease will be perfected and applied in many districts.

In order to encourage flock-owners in the control of this disease, a supervised plan has been presented, whereby flocks meeting certain requirements will be accredited by the State Department of Agriculture.

I am appending hereto the rules and regulations governing this work, as well as a copy of a blank certificate being issued to owners of flocks *free* from this infection. In many localities the prevalence of avian tuberculosis demands a community movement, yet pure-bred flocks free from the disease may supply healthy breeding stock. The heavy infection in other districts demands a cooperative clean-up of the flocks in a given district.

PLAN FOR HANDLING AVIAN TUBERCULOSIS ON FLOCK BASIS

1. Determine the extent of the infection by history, tuberculin test and autospy.
2. Removal and slaughter of diseased fowls, under official supervision. In extensively infected flocks the exposed fowls should also be slaughtered.
3. Clean thoroughly and disinfect premises under official supervision.
4. Flocks from which diseased fowls have been removed, but where the entire flock has not been slaughtered, should be given a physical examination and all fowls in good condition tuberculin-tested. These should be retested in 60 to 90 days.
5. In the event of reactors being disclosed by the 60-to-90-day retest, the flock should be again tested in six months.
6. After a negative test and after all fowls are in good physical condition, the flock should be tuberculin-tested annually.
7. All diseased fowls should be killed under official supervision.
8. Droppings should be disposed of so as not to come in contact with poultry.
9. Cleanliness should be maintained and frequent disinfection used.
10. Fowls other than baby chicks should be tuberculin-tested before being added.

11. Uncooked kitchen scraps and similar refuse should be discontinued as feed.
12. Consistent effort should be made to exterminate carriers, such as rats, mice and pigeons.
13. In the prevention and eradication of avian tuberculosis attention should be given the tuberculosis problem in all kinds of associated live stock, especially swine.
14. Owners will be expected to practice careful breeding, correct feeding, proper flock-management and principles of sanitation and to use preventive measures for other fowl diseases.

CERTIFICATE OF INSPECTION
AND
TEST FOR AVIAN TUBERCULOSIS

STATE DEPARTMENT OF AGRICULTURE
Division of Animal Industry
Springfield, Illinois

Date.....

TO WHOM IT MAY CONCERN:

This is to Certify that the entire flock of.....
(Owner)

....., consisting of.....fowls,
(Address)

has undergone inspection; has passed the required number of tuberculin tests; and that the owner has complied with the requirements prescribed by the State Department of Agriculture for the prevention, repression and eradication of avian tuberculosis.

This certificate is good for one (1) year from date unless revoked.

No.....

.....	.....
Director,	Chief Veterinarian,
State Department of Agriculture	State Department of Agriculture
Springfield, Illinois. [SEAL]	
	.....
	Veterinarian in Charge.

NEWS ITEMS

The Kentucky Agricultural Experiment Station reports more eggs from hens fed lime, and the eggs hatched better.

In a series of articles published in the *Michigan Business Farmer*, this paper has been introducing to its readers the men at the Michigan State College who are solving the problems of the farmer. The first to be introduced was Dr. Ward Giltner, head of the Department of Bacteriology and Hygiene and dean of the Division of Veterinary Medicine.

THE NEEDS OF THE GENERAL PRACTITIONER IN SMALL ANIMAL PRACTICE*

By J. C. FLYNN, *Kansas City, Mo.*

The general practitioner located in a medium-sized town is beginning to realize more and more that there is a demand for his services in the treatment and hospitalization of small animals. And, as this demand increases, he begins to study the problem of equipping his present place to meet this demand. The field he is now attempting to develop is entirely new to him and as a result he goes ahead and installs impractical equipment which is expensive and in some instances almost useless.

This fact has been forcibly impressed upon my mind many times as I have been invited to visit hospitals in several states in good-sized cities, where the practitioner has had his income reduced materially by the advent of the automobile.

In considering the needs of the general practitioner in small-animal work, it is necessary to take into consideration the difference in the natures of the large and small animals. In law the dog is classed along with man as an animal of intelligence and, as far as I know, is the only animal so classed. This being the case it is necessary to deal with him accordingly, as the methods used in handling, feeding, housing and medicating him must of necessity differ from those of the other animals.

The matter of commercial value is not so often a factor in small-animal work, but the matter of sentiment is much more often a factor. Therefore, the problem of handling the client in a manner that pleases is of much more importance. You may rope, cast, and hog-tie your large animals and not be criticized by your client so long as you produce results, but not so with the lady's pet poodle, for no matter now unruly or spoiled he is, he must be treated as a pet.

The first item of importance is the personal appearance of the doctor. We are all victims of habit and the nature of the work of the general practitioner would have a tendency to make him careless of his personal appearance, a little rough in his method of approach and handling of animals. His first need is to take himself to task and school himself in the methods of handling his patient and his client. The next need is to see that

*Presented before the thirty-third annual meeting of the Missouri Valley Veterinary Association, Kansas City, Mo., July 27-28-29, 1926.

his office is neat in appearance and is suitable for the reception of ladies and children, because ladies and children make up the major portion of our clients.

Housing is the next problem. We have two principal animals with which to deal—the canine and the feline—which, of necessity, demands two rooms. They may be small but must be light and airy and so arranged that they are easily cleaned and disinfected. The general practitioner must next consider the fact that both dogs and cats have contagious diseases. This, of course, requires two more wards, in order to separate your contagious cases from your non-contagious cases.

In the matter of exercising dogs, it is necessary to have at least two yards absolutely separated in order to exercise both the contagious and non-contagious cases. In the matter of exercising of cats, it is not so essential that they be given large quarters, as a cat gets along very nicely with very little exercise and is perfectly content to remain in a good-sized cage for a long period, and will show no ill effect.

Cages

In the matter of cages there is no more satisfactory cage than the built-in cage. This, of course, is not practical unless the doctor owns the building or has a long-time lease. The advantage of the built-in cage over the portable one is the sewer connection. The built-in cage should always drain to the rear and may be single, double or triple-decked. The single deck is the most comfortable for the patient on account of better light and ventilation. These may be built around the room with the backs to the wall or may be built in the center of the room in two rows with the backs together. The materials used may be cement, for the floors and side walls, with metal for the tops and fronts, or the partition may be glass or metal. Glass is the most sanitary. The most satisfactory size is about 36 inches square and about 36 inches to 40 inches deep with a 12- to 18-inch door that opens in. If cages face each other and are single-decked, the fronts should be of solid metal to prevent the dogs seeing the other dogs opposite and creating a disturbance.

The advantage of draining the cages to the rear is that one may stand in front of the cage with a hose and wash all material to the back and through the sewer, without becoming soiled, and with little effort, while the front drain requires considerable effort to clean and one must brush or wash all waste material

toward himself and work over it while cleaning out the cage.

The portable cage is a valuable asset to the small-animal practitioner. A very convenient and practical cage is one made of 1½-inch diamond mesh, number 9 wire, triple-decked, with each compartment about 36 inches deep for the bottom cage, 24 inches deep for the second cage and 18 inches deep for the top cage. Thus, the entire height of the cage would be six inches, with the floor of the top cage just five feet from the floor of the room, making it an easy matter to reach the patient in the top cage. Each compartment should be equipped with a removable sanitary pan, about ½ inch deep, that slides in in grooves and is held in place by the door when it is closed. This is to prevent the patient in the cage below from pushing the floor up and getting into the cage with the other patient. This sanitary pan is easy to remove and clean. The cage, being portable, may be moved from one room to another and will pass through the average door quite readily. The portable cage has the advantage of serving where it is most needed and may be taken from the feline ward to the canine, or vice versa, if conditions demand.

Transportation of Hospital Cases

Another problem is how to handle the case that must be brought to the hospital. The cat or dog must be securely confined in order to be transported to and from the hospital. An ambulance built for this purpose, with two or three compartments, is the most advisable, where the practice demands, but a very practical arrangement may be substituted by having built a carrier that will attach to the running-board of your car. This carrier may be made of metal or wood if properly ventilated. However, care must be exercised not to place a sick animal in a small carrier that is exposed to the rays of the sun on a hot day. A carrier 14 inches wide by 36 inches long and 36 inches deep will carry any dog comfortably a short distance, if properly ventilated. A small hand-carrier 10 inches wide by 18 inches long and 12 inches deep, with ventilator at each end, is very convenient for carrying cats and puppies to and from the hospital. This has the advantage of being portable and the cat may be be placed in it in the home or hospital, without danger of escaping.

A white porcelain-top kitchen-table serves well as a dressing-table, also for examination of the patient, and by placing screw-eyes on the underside, at each corner, it makes a very good operating-table. It is sanitary and clean and for all-around

purposes, where small-animal work is limited, I know of nothing better. A small corner of the drug-room should be set aside for drugs and instruments suitable for small animals.

Drugs should be selected with a view to their ease of administration. Granules, tablets and pills are easier to administer than capsules or liquids. Odors and tatse should be eliminated as far as possible. Hypodermic medication in the hospital should be resorted to, where accuracy is essential. Agents for external application must be selected with the thought in mind of preventing damage to the clothing and house-furnishings of the owner. Oily, sticky, or foul-smelling agents can not be used on the house pet satisfactorily, if the patient remains at home.

The doctor should be schooled in the manner of approaching and handling the patient while medicating it and be able to show his client the easiest method of application.

A Kitchen Is Necessary

It is necessary to have a place to prepare the food for the patients, and a small, neat, well-stocked kitchen should be provided. A place should be provided where a bath could be given either the cat or dog without danger of it escaping or being exposed to the dangers of a cold and, possibly, pneumonia. A wooden vat for lime-and-sulphur dips should also be provided, away from the office far enough to prevent troublesome odors. An electric clipper is quite a valuable asset where the practice is large enough to demand this kind of service.

White porcelain pans for food and water are the most serviceable and, when kept clean, make an attractive addition to the well-kept hospital.

If the infirmary is in a location that demands quiet, it is well to provide a place for one or two noisy patients. One meets with cases of rabies, hysteria, and unruly patients that can not be quieted and it is well to provide a suitable place for them.

Special instruments must be provided for small-animal work, and I will attempt to mention only a few of the more essential ones: A set of obstetrical instruments. One may get along nicely with three different sizes. A mouth-speculum, vaginal speculum, ear-speculum, nail-clipper, dental forceps, dental scalers, stethoscope, curet, homostats, scalpels, catheters, both male and female, a male feline catheter, irrigating-can, stomach-tube (a horse catheter serves very well for this purpose), a set of spaying instruments (several houses list them as such).

In citing the needs of the general practitioner in small-animal work, I have attempted to outline the more important needs and have not by any means mentioned all necessary equipment for small-animal work. What I have outlined may be of assistance to the general practitioner attempting to enlarge his practice by caring for a limited number of small animals.

In closing I wish particularly to stress the fact that neatness of appearance, cleanliness, politeness to the client and kindness to the patient go a long way in the building of this kind of practice.

DIAGNOSIS TO STOP DISEASE

This work is conducted primarily to help veterinarians in giving better service to their farmer clients. The information furnished is of most value when conveyed to the owner of live stock through a veterinarian, as of necessity it must be largely technical in nature. However, farmers are invited to send in specimens and are given as full information as is possible. During the year the Veterinary Science Laboratory received a total of 4,914 specimens for examination. Reports were made on these specimens directly to those who submitted them. Judgment as to the treatment, care, and management of the herds and flocks in question and the protection of neighboring herds from acquiring similar diseases was based upon this diagnostic work.

That the confidence reposed by Wisconsin dairymen in the blood test for infectious abortion of cattle is well placed is attested by dairymen from the Hawaiian Islands, who bought from Wisconsin farmers 250 head of dairy cattle for export. The foreign buyers not only demand that all cattle before purchase must recently have passed the tuberculin test to insure freedom from tuberculosis, but also must pass the abortion test to detect abortion infection. While these requirements were new to some of the farmers who offered cattle for sale, practically all of them saw the buyer's point of view, and willingly complied.

In addition to the 250 samples from cattle selected by the Hawaiians and the 3,398 from herds in which the abortion disease has broken out, a considerable number have been received of late from animals designed for shipment to certain southern states.

—*By* F. B. Hadley, in *Agriculture's Triple Seal,* University of Wisconsin Circular 193.

COCCIDIOSIS IN FEEDER CATTLE*

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It is not the purpose of this paper to present new data on the subject of coccidiosis, but merely to restate some of the important points regarding this disease.

Coccidiosis in cattle is a disease which has been recognized and described only a few times in the United States, but it is a great deal more prevalent than reported, because many times the disease is not recognized. The work done with it in this country has been very limited, so we do not have much detailed information as to the prevalence or nature of the condition as it exists here. Coccidiosis, or "red dysentery," as it is commonly called, is caused by a protozoan parasite, *Coccidium zurni*. The name "rothe Ruhr" was suggested by the discharges of blood in the feces.

Among protozoan parasites coccidia have received considerable attention because they have served to demonstrate the remarkably complex life-cycle of certain groups of protozoa. They also possess a certain practical importance since they may produce diseases at times of epizootic proportions among domestic animals.

It is a common disease of Denmark, France, Switzerland, North Germany and England. Coccidiosis as a disease in cattle was first brought forward in 1892, by Zschokke and Hess, who observed it in Switzerland. Before this Zurn, in 1878, had reported coccidia in the intestines and mesenteric glands of a calf which died as a result of severe enteritis. Since 1892 coccidia have been found in cattle by various observers, especially in tropical and sub-tropical countries and to a slight extent in temperate climates. In the United States, up to 1911, the presence of coccidiosis had not been noted. Zublin, in 1908, and Jowett, in 1911, made cultures of the organisms and described to some extent the development and cycles through which they pass. Since that time, from 1915 to 1918, Schultz has reported in a general way the existence of the disease in the Philippines and the Pacific Northwest, chiefly Washington and

*Presented before the thirty-third annual meeting of the Missouri Valley Veterinary Association, Kansas City, Mo., July 27-28-29, 1926.

Oregon. In July, 1918, Smith and Graybill reported an outbreak in New Jersey.

Life Cycle

The coccida are microscopic bodies, ovoid, round, or subspherical. They are limited by a thick, double-contoured envelope. The organism passes through a complicated life-cycle and has a peculiar ability to adapt itself to marked changes of environment. The coccidia found in the intestines are already fertilized female parasites or oocysts.

The disease is spread by healthy animals taking in, with the food and water, oocysts in which the process of sporulation has been completed. When the oocyst reaches the intestine the sporozoites escape from the oocyst and wander with the intestinal contents toward the anus and penetrate into the epithelial cells of the crypts of Lieberkuhn of the large intestine, particularly into those of the rectum. It is remarkable, however, that the small intestine is also profoundly affected in young calves.

Sometimes one protozoon divides into a great number of daughter-cells and the process is repeated for many generations. It is this primitive but rapid division that destroys the host, due to the large amount of tissue destroyed. Whenever these rapid-division forms are found in great numbers, the disease exists in a dangerous form. If the infested animal possesses enough vitality to resist the attacks of the organism for a sufficient length of time, the coccidia will ordinarily run their course. The mucosa of the intestine becomes stripped off in places, resulting in extensive hemorrhages in the lumen, which causes the red diarrhea. As the mucosa is deprived of its protective covering, an intense invasion of debilitated animals may lead to secondary infection by intestinal bacteria and this may produce severe enteritis and general infection with death, due to septicemia or bacteriemia.

After a certain time this quick, asexual method of multiplication stops. The minute protozoa become differentiated into male and female forms, fertilization then takes place, and better developed but still unicellular organisms with well-marked, double outline and resistant, tough capsule are formed.

Into the larger of these the male form penetrates at a certain point and soon there appear, in the roundish or egg-shaped, transparent parasite, four small, oblong bodies—spores. These are also surrounded by firm membranes; each one divides again into two small organisms so that a fertilized female cell eventually

produces eight minute offspring —sporozoites. These forms are all very resistant; they can stand drying-out, freezing, and may lie dormant for a long time.

Infection

Infection is spread by the water of pools and marshes, also probably by feed which has come in contact with infected water. The resistant forms may be lodged on grass or, in the dried condition, on hay, oats or corn, of they may be found in contaminated water-holes. In Switzerland several cases of red dysentery have been observed; the disease being caused by feeding contaminated hay in winter. The susceptibility is greatest in young calves up to the second year of life, but older cattle likewise contract the disease.

Anatomical changes: One usually finds the intestines contracted. In the large intestine and particularly in the rectum one finds thin, fluid, greenish or reddish-gray to reddish-brown contents, sometimes containing distinct blood coagula or even ichorous masses. In consequence of the loss of epithelial cells, the surface of the mucosa appears rough in places with hemorrhagic spots or streaks.

Symptoms: The period of incubation of the disease is comparatively long—about three weeks; occasionally symptoms may come on after six or eight days.

The first symptom noted is the appearance of blood in the feces, as a bloody diarrhea, in the form of dark-brown clots or bright-red streaks. The feces are fetid and sometimes have a cadaverous smell. As soon as hemorrhagic feces appear, there is at first slight, later on intense, tenesmus which may lead to prolapse of the rectum.

In other cases normal feces are voided at first, followed by a small amount of coagulated blood, later on feces and blood are mixed and diarrhea supervenes.

In this stage, mild cases soon pass into recovery, particularly in adult cattle; the blood disappears after two or three days and after a few days the diarrhea stops. The appetite, however, remains capricious for some time.

In grave cases, particularly in young animals, there is a rapid deterioration of the condition, tenesmus becomes more intense, and the feces become more fluid and foul-smelling.

The eyes are sunken, in some cases; there is a marked rise in temperature, stiffness of the hind parts, lachrymation, and a

muco-purulent nasal discharge. The animals are dull, show a disinclination to move about, lie down a great deal, eat little or nothing, and emaciate very rapidly. The skin becomes tight, the hair-coat rough, and the tail and buttocks are stained with feces. The feces are scanty and are passed with a great deal of straining, as the disease progresses.

The symptoms point to septic infection as the probable cause of death. It is obvious that the mortality rate in this disease will depend largely upon the presence of septic organisms in the herd and their relative degree of virulence; for the coccidia themselves do not cause inflammatory reactions but simply open the way for bacterial invasion.

The lethality for cattle seems to be rather low, varying from 2 to 5 points.

After the symptoms develop, the disease runs a course of from two to seven days. In the acute form death usually occurs during the second or third day, but there are also hyperacute cases, in which the animals die within 24 hours in convulsions. In those animals that recover, the appetite returns on the fifth or seventh day and at first is depraved.

The prognosis is more unfavorable the younger and weaker the sick animals.

Diagnosis

The diagnosis is made from the history and symptoms, but can be positively established only by microscopical examination and finding the coccidia either in the feces, in scrapings from the mucous membranes or in sections of the intestine. However, the passage of blood in the feces, with tenesmus, lack of appetite, cessation of rumination, and rapid emaciation with absence of any history of feeding-causes, are suggestive.

Treatment and prophylaxis: Since coccida are very resistant to heat, cold, and ordinary disinfectants, and as the life history is still obscure, treatment is largely symptomatic, and prophylactic measures only can be instituted against possible sources of infection.

As the coccidia gain entrance through the food and water, care must be taken that the water supply is fresh and pure and that forage is clean and plentiful in the pasture and well cured in the barn.

The line of treatment usually employed consists of laxatives, intestinal disinfectants, astringents, enemas and tonics. The treatment usually used, which has given uniformly good results,

has been equal parts of tannic and salicylic acids, one-half to one-ounce doses daily. Also one-half to one-ounce doses of formalin, creolin, or other intestinal antiseptics may be used daily.

Good results from rectal injections may be obtained with 1 per cent solutions of alum or tannic acid.

A very good tonic to use, if the animals become weak, is a 1 per cent aqueous solution of strychnin sulphate, given in half-ounce doses three times a day.

It is a good prophylactic measure to change the food and water in an outbreak of coccidiosis.

In the March, 1924, issue of the *Veterinary Record*, Dr. W. Scott reports favorable results from the use of *B. coli* serum for treating calves suffering from coccidiosis. This suggests the possibility of anti-calf scour serum begin a valuable aid in treating the secondary infection that occurs during an outbreak of coccidiosis in calves.

One of the best treatments, according to foreign literature, is thymol, which may be given in a dose of 15 grams a day in two doses, for cattle from eighteen months to two years of age.

Case Reports

The following cases among beef cattle were recorded at the Veterinary Hospital:

In 1924 there was an outbreak of coccidiosis among 220 feeder calves; 45 head had a diarrhea and eight were passing clear blood. There were no losses in this outbreak.

In the fall of 1924, coccidiosis occurred among thirty three-year-old steers; four had a bloody diarrhea with clots of blood and one steer died.

In the fall of 1925, there was an outbreak of coccidiosis among 200 head of feeder calves, with only one death.

During the past three months we have had four outbreaks among dairy and beef cattle. In a group of 100 head of yearling steers on pasture, only one was affected and recovered.

One five-year-old Holstein cow, in a herd of thirty, was affected and died within 36 hours.

One three-months-old Shorthorn calf, in a group of ten, died within three days after showing first symptoms.

One three-year-old Jersey, in the college dairy herd of 160 animals, was severely affected but recovered.

It is evident that the degree of transmissibility of the disease is very low.

ULTRAVIOLET RADIATION AS A THERAPEUTIC AGENT IN VETERINARY MEDICINE

By J. W. PATTON, *New York, N. Y.*

OUTLINE

A. HISTORICAL.
   1. Veterinary use of ultraviolet radiation.
B. SOLAR SPECTRUM.
C. CHEMICAL PROPERTIES.
D. BIOLOGICAL EFFECTS.
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   2. Effects of ultraviolet radiation on secretions and toxins.
   3. Effects of ultraviolet radiation on water.
   4. Effects of ultraviolet radiation on the blood (experimental).
E. EQUIPMENT.
F. TECHNIC.
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   2. Administration of treatment.
   3. Position of the patient.
   4. Voltage.
   5. Distance.
   6. Time of exposure.
   7. Frequency of application.
   8. Variations in the method of ultraviolet application.
G. TREATMENT OF VARIOUS PATHOLOGICAL CONDITIONS IN HUMANS.
   1. Fractures.
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   4. Circulatory diseases.
   5. Diseases of the alimentary tract.
   6. Genito-urinary diseases.
   7. Nervous diseases.
   8. Diseases of the special senses.
H. TREATMENT OF PATHOLOGICAL CONDITIONS IN DOGS.
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   2. Distemper.
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I. DISCUSSION.
J. CONCLUSIONS.
K. REFERENCES CITED.
L. REFERENCES READ.

HISTORICAL

"Light is the life of Man," is a centuries-old saying, the significance of which is just coming to be realized by the present generation. As early as the first century, the sun's rays were used in the treatment of man. It is a well-iknown fact that the Egyptians treated their afflicted by exposure to the sun. The Greeks and Romans exposed their nude bodies to the sun, in order to maintain bodily health. Cicero describes the solaria

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upon the roofs and in the gardens of wealthy Romans' country villas.

All of the beneficial results were then supposed to be due to the warmth of the sun's rays, rather than to the chemical effects of sunlight upon the system. Hippocrates, Celsus and Galen preached of its virtues hundreds of years ago. While the ancients worked without a proper understanding of the action of the sun's rays, today we are in a better position to use this agent correctly and intelligently. We can not question the fact that there is a decidedly curative, even prophylactic, action in the sun's rays. Light is imperative to longevity; without it life can not long exist. During the Dark Ages the practice of solarization fell into complete oblivion.

In order to revive the therapy of light, a prize was offered by the University of Gottingen, in 1796. During the middle of the eighteenth century, a clinic was established in Austria, where patients were treated, with results which astonished medical men of that period.

In 1877 Downes and Blunt[1] proved the bactericidal properties of light. Sir Isaac Newton, by his discovery of the spectrum, opened the path for experimental therapeutics. Herschel, repeating Newton's experiments, placed a thermometer before each color of the spectrum and noticed that, when placed beyond the limit of visible red rays, the thermometer continued to rise, proving the existence of invisible radiant energy. These rays, owing to their position in the spectrum, were named "infra red," or heat rays. It was left to Finsen to separate the harmful from the therapeutic rays. By later and more careful research, science demonstrated the beneficial rays to be ultraviolet. Later, clinics were established in the Vandois Alps, where excellent results were obtained in the treatment of tuberculosis.

The discovery by Peter Cooper Hewitt, who made a lamp consisting of a vacuum quartz tube containing mercury vapor, marked the first vapor-lamp therapy and the abandonment of sunlight as a therapeutic agent. This was due, in part, to the fact that the ultraviolet rays were produced in greater profusion by the mercury-vapor arc.

Veterinary Use of Ultraviolet Radiation

Ultraviolet radiation has been used in veterinary work only recently. However, there appears to be a wide-open field for research with radiation in the treatment of animals.

Professor Cinotti, of the Naples Veterinary School, is reported to have found ultraviolet radiation very useful in cases of parasitic dermatitis.

Russell and Russell[2] mention the installation of an ultraviolet apparatus in the monkey-house at the London Zoological Gardens. Frick and Bullard[3] report excellent results with radiation in the treatment of canine distemper, as well as in other conditions. Considerable work has been done in this country on the prevention and treatment of rickets in fowls, for which radiation is almost a specific.

TABLE I—*Percentage of radiation given off by various sources (Pacini).*

SOURCES	INFRA-RED %	LIGHT %	ULTRAVIOLET %
Mercury vapor	52.0	20.0	28.0
Sunlight	80.0	13.0	7.0
Arc-lamp (carbon)	85.0	10.0	5.0
Incandescent lamp	93.0	6.0	1.0

THE SOLAR SPECTRUM

Sunlight is the natural source of ultraviolet radiation and the most powerful form of radiation known. Yet, of the total solar radiation, it is estimated that only one two-billionth part is intercepted by the earth, and of this amount only six-tenths passes through the earth's atmosphere.

In the solar spectrum are many thousands of radiations, rays of light, from the warmest yellow to the deepest violet, the latter being the coldest in the solar spectrum. To describe these deep violets, the word ultraviolet is used.

The term "ultraviolet rays" is sometimes used incorrectly, when it is meant, instead, that a high-frequency current is passed through a vacuum-glass tube, within which is produced a purplish color. There are no light rays in this apparatus, and there is no therapeutic effect other that that produced by the high-frequency current.

Ultraviolet radiation can be considered as formed of invisible rays, whose frequencies are greater than those of the visible spectrum.

The different wave-lengths of the complete spectrum are given in table II.

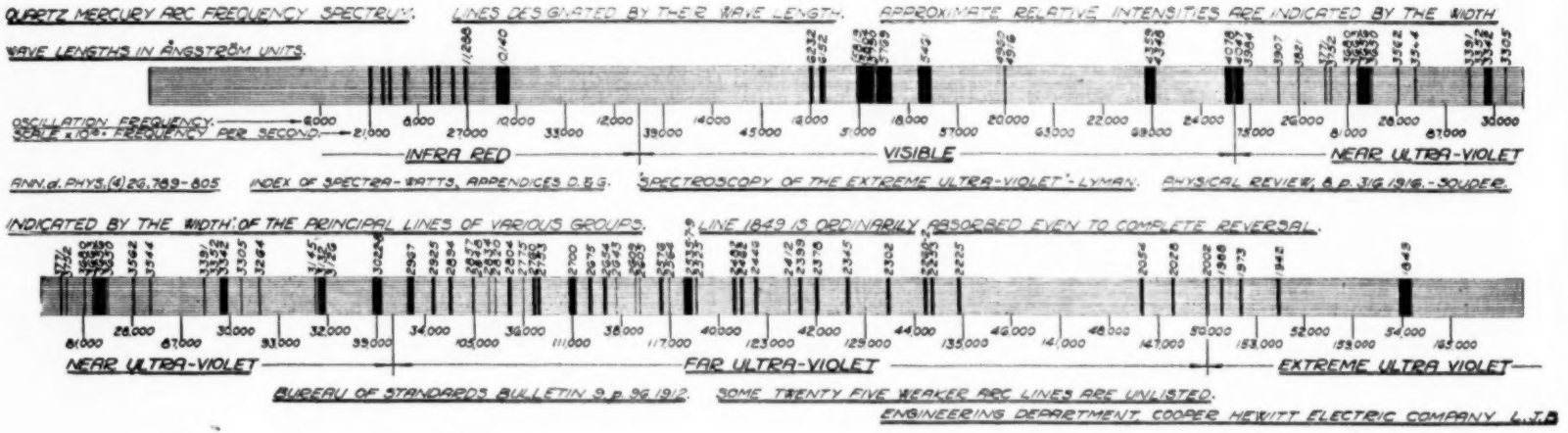
QUARTZ MERCURY ARC FREQUENCY SPECTRUM.
LINES DESIGNATED BY THEIR WAVE LENGTH.
APPROXIMATE RELATIVE INTENSITIES ARE INDICATED BY THE WIDTH
WAVE LENGTHS IN ÅNGSTRÖM UNITS.
OSCILLATION FREQUENCY.
SCALE X 10⁻⁸ FREQUENCY PER SECOND.
INFRA RED
VISIBLE
NEAR ULTRA-VIOLET
ANN. d. PHYS. (4) 26, 789-805.
INDEX OF SPECTRA - WATTS, APPENDICES D, E, G.
'SPECTROSCOPY OF THE EXTREME ULTRA-VIOLET' - LYMAN.
PHYSICAL REVIEW, 8 p. 316 1916. - SOUDER.
INDICATED BY THE WIDTH OF THE PRINCIPAL LINES OF VARIOUS GROUPS.
LINE 1849 IS ORDINARILY ABSORBED EVEN TO COMPLETE REVERSAL.
NEAR ULTRA-VIOLET
FAR ULTRA-VIOLET
EXTREME ULTRA VIOLET
BUREAU OF STANDARDS BULLETIN 9, p. 96, 1912.
SOME TWENTY FIVE WEAKER ARC LINES ARE UNLISTED.
ENGINEERING DEPARTMENT, COOPER HEWITT ELECTRIC COMPANY, L.J.B.

FIG. 1. Mercury arc frequency spectrum.

TABLE II—*Wave-lengths of the complete spectrum (Russell)*

RAY	WAVE-LENGTH (ANGSTRÖM UNITS)
Gamma rays of radium	1 A to .015 A
X-rays	12 A to .15 A
Ultraviolet	1000 A to 4100 A
Visible spectrum	4100 A to 6500 A
Infra-red	6500 A to 3 mm.
Hertzian oscillations	3mm. to several km.

The solar spectrum can be divided roughly into visible and invisible portions, seven well-known colors making up the visible portion. Each of the colors is a movement of the ether, with its own average wave-length.

TABLE III—*Average wave-lengths and frequencies of the seven colors of the solar spectrum. (Russell)*

COLOR	AVERAGE WAVE-LENGTH (A. UNITS)	FREQUENCY (NUMBER OF MILLION MILLIONTHS PER SECOND)
Red	6500	375
Orange	6000	571
Yellow	5510	541
Green	5200	595
Blue	4750	622
Indigo	4400	668
Violet	4100	750

CHEMICAL PROPERTIES

Chemical changes take place in the presence of all rays of the spectrum, but some so-called photochemical reactions have velocities inversely proportional to the wave-lengths of the rays present.

An equimolecular mixture of dry chlorin and hydrogen may be kept in a sealed tube in darkness for several weeks, without appreciable combination taking place. On exposure to diffuse daylight, complete conversion takes place in a few hours, whereas direct sunlight causes a reaction of explosive violence.

An ordinary photographic plate may be exposed to a red or orange light for a considerable time before fogging takes place. If, however, it be exposed to a blue or violet light, or daylight, it immediately becomes blackened. The chemical effect of ultra-violet light is purely catalytic in nature. Sometimes the velocity of reaction is infinitely small in the absence of light, while it is infinitely great in the presence of a high concentration of rays of short wave-length.

The light of the solar spectrum varies greatly in its chemical actively, high wave-lengths (infra-red, red, orange) having very much smaller actinic power than the shorter wave-lengths (blue, violet, ultraviolet). Nascent halogens (chlorin, bromin, iodin) and oxygen are readily set free from their components by the action of the ultraviolet rays.

Starch solutions are hydrolized to maltose and dextrin, and inulin to glucose and levulose. Amylase and invertase are destroyed by ultraviolet rays. Formic acid is formed from a mixture of carbon dioxid and ammonia, acted on by ultraviolet rays. Sugars have been synthesised by irradiation of distilled water, through which carbonic acid gas is being passed.

Biological Effects

Physicochemical reactions, particularly those induced through the influence of radiant energy displayed on biologic structures, must be interpreted in terms of electronic behavior.

The physiological effects of ultraviolet energy have their origin in the photochemical reaction produced when the energy is absorbed. In the case of simple organic compounds in vitro, ultraviolet radiation, depending upon its constituent wave-length, acts as a powerful oxidizing and reducing agent, and so we may assume the same is true with the more complex chemical compounds whose totality represents the living cell.

When ultraviolet radiation strikes a tissue surface as, for example, the skin, one part is absorbed, another is reflected and a third is transmitted. Most of the constituents of protoplasm, being colorless, do not absorb visible rays, but the great majority of them do absorb ultraviolet rays strongly. The different constituents of protoplasm commence absorbing light in the region of 3000 A. The whole protoplasm of minute organisms is affected when they are exposed to ultraviolet radiation.

Metabolism represents a reaction between a force and a resistance. The force, dominantly chemical in origin, is derived from two sources:

1. Intrinsic.
2. Extrinsic.

The former includes katabolism and anabolism of foodstuffs. The latter includes climatological influences of environment, as air, light and invisible energy (infra-red and ultraviolet rays).

All the laws of these forces are subject to the fundamental principles of energetics. The breaking-down and building-up

processes involve three factors: a chemical force, a chemical resistance and a chemical velocity:

(1) Fc = Chemical force.
(2) Rc = Chemical resistance.
(3) Vc = Chemical velocity.

These are so interdependent as to bear the following relation, one to another:

(a) $Vc = \frac{Fc}{Rc}$

From which

(b) $Fc = Vc \times Rc$.

That is, the inherent chemical force is the product of the velocity of chemical reaction times the chemical resistance.

Those cases in which metabolism is below normal are expressions of diminished chemical force or increased chemical resistance. Those cases in which the metabolic rate is above normal are expressions of an enlivened chemical force or accelerated velocity of reaction.

Considering the epidermal integument as an organ contributing to the metabolic integrity, it is obvious what may be expected when the environment is suddenly changed chemically, or, in other words, when the organism is subjected to ultraviolet radiation. Besides reaching depths of 70 or more microns in the cellular structure, the near-ultraviolet radiation meets also, in its passage through the cell layers, capillary blood and lymph. Both are strong ultraviolet absorbents.

It must not be assumed that ultraviolet energy is absorbed by the blood and, as such, is conveyed for distribution to various parts of the body to be emitted again. When the waves are absorbed, their identity as a wave-motion is lost; the impact of the wave-motion on the absorbing medium induces certain biophysical changes. The products of these biophysical changes may be carried in the circulatory system (Pacini[4]).

Perhaps the most noticeable biological effect of ultraviolet radiation is the effect it has on the skin. At the time of radiation, perhaps only a sensation of warmth is felt and usually no reddening is noticed until a lapse of from two to eight hours after radiation. Following repeated treatment, erythema is followed by desquamation and later pigmentation of the radiated part, due to the deposition of melanin around the nuclei of the basal cells of the epidermis, presumably forming a protective shield for the

nuclei against excessive radiation. The appearance of pigmentation necessitates increasing the length of exposure. Melanin is supposed to be the end-product of oxidation of tyrosin, probably through the agency of an oxidizing ferment—tyrosinase.

Effects of Ultraviolet Radiation on Bacteria

The bactericidal action of sunlight on bacteria is fully realized. Downes and Blunt,[1] in 1877, proved the action of light on bacteria, as also did Koch in the case of the tubercle bacillus.

Browning and Russ[4] divide the bactericidal action of ultraviolet rays into two groups as follows:

Group 1. 3800 to 2960 A. The region of greatest penetration, but lacking in bactericidal power.

Group 2. 2960 to 2100 A. The region showing greatest bactericidal action, but lacking in penetrative power.

Effects of Ultraviolet Radiation on Secretions and Toxins

Ultraviolet rays destroy the secretions and toxins of organisms, but only after a longer period than is required to kill the organisms themselves. The resistance of bacteria to radiation does not vary in the same way as their resistance to chemicals and heat, young cultures being more susceptible than old ones. The destructive effect which radiation has upon organisms is apparently due to coagulation, or by affecting their protoplasm in such a way that certain salts combine with the protein of the protoplasm, forming insoluble compounds. Fresh cultures of *Staphylococcus aureus* and *Bacillus coli*, subjected to radiation from a mercury-vapor lamp, at a distance of 10 inches, were rendered sterile after exposure for 5 seconds (Russell and Russell[2]).

Effects of Ultraviolet Radiation on Water

Water, being transparent to ultraviolet rays, can be completely sterilized by radiation (Tousey[5]), whereas Pacini[6] reports that bacteria added to water sterilized by radiation are killed in 60 minutes ("residual effect").

Effects of Ultraviolet Radiation on the Blood

Normal blood absorbs all rays with wave-lengths less than 4500 A. Some authorities hold that there is a great proliferation of the blood corpuscles and an increase in the hemoglobin content.

Russell and Russell[2] report an increase in the erythrocytes from 4,300,000 to 5,725,000 and the hemoglobin from 70 to 90, following three weeks of radiation.

The writer, working with dogs suffering from distemper, secured but a slight increase in the erythrocytes following radiation. The differential count, however, showed an increase of 45 per cent of the eosinophilic cells and 28 per cent of the small mononuclear lymphocytes. Slight change was observed in the large mononuclear lymphocytes, while there was an actual decrease (15 per cent) in the number of polymorphonuclear leucocytes, contrary to what one would expect to find in the case of dogs suffering from an infectious disease. The results of the changes observed in the hemoglobin index during radiation are set down in table IV. The hemoglobin index was ascertained on some 45 cases, with the same progressive increase being observed. In making these tests of the hemoglobin index two readings were made when the dog first entered the ward and at seven-day intervals for three weeks. No observations were made after this time, as few of the dogs were radiated for a longer period. The cases selected for radiation and for blood examinations received no other treatment than the rays, beyond careful nursing, except as elsewhere noted. The dogs were assigned to the various phases of study as they came into the ward, care being taken to have suitable controls in about the same stages of the disease, severity and physical condition. With a capacity of about one hundred distemper cases, filled to capacity most of the time and with cases coming and going daily, it was not such a difficult task to obtain suitable material. However, because of the time involved, observations were made on but ten cases throughout,

TABLE IV—*Effects of ultraviolet radiation (exposure for 20 minutes at distance of 36 inches) on the hemoglobin content (Sahli-Leitz hemoglobinometer).* (*Patton*)

CASE NO.	BREED	AGE (MOS.)	BEFORE	1ST WEEK	2ND WEEK	3RD WEEK
16692	Mongrel	7	60	67	70	78
16323	Pekingese	8	58	60	65	72
16266	Police	14	65	72	80	85
16617	Police	12	70	78	90	94
16552	Bull	11	67	78	85	90

as to erythrocytes. The differential count, however, was carried out with nineteen cases, making observations from time of entry into the ward and continued until three weekly readings had been made.

The lymphocytosis caused by ultraviolet radiation has been found to be due almost entirely to rays shorter than 3300 A. Rays longer than 3300 A. acuse a leucopenia.

Another phenomenon following radiation is the increase in the calcium content, as well as in the concentration of the inorganic phosphorus in the blood.

Sonne[7] found that radiation caused a rise in the antigenic properties of the blood, by testing its effect on typhoid agglutinins and by its increased resistance to diphtheria toxin. Its bactericidal action on the blood is generally recognized. The writer, working along somewhat similar lines to Sonne, reports the rather interesting result in table V. In these tests the bacterin-alone treatment runs close to what might be generally expected (33.3%), whereas the radiation-alone checks up fairly well with the results as set down in table X. The bacterin (canine distemper mixed bacterin) plus the radiation would appear to check up with the results of Sonne. It would appear that radiation, with the fused-quartz mercury-vapor lamp, assists in some way in the antigen-antiboby phenomenon. Another important action of ultraviolet radiation is its analgesic effect, brought about, possibly, by some biologic action on the irradiated interepithelial nerve fibrils.

It is generally believed that on.y the rays which actually penetrate to the skin can be of direct therapeutic value. Tests were made to ascertain to what extent the hair-coat in dogs prevented, if any, an appreciable degree of eruthema. The results of these tests are set down in table VI. From these results it would appear that the hair-coat materially affects penetration of the rays, even in the short-haired breeds.

Equipment

Intelligent selection between two types of ultraviolet lamps, "air-cooled" and "water-cooled," is one of the first essentials in the treatment of a given condition with ultraviolet rays. The main difference between these two types is the length of the wave-spectrum. The air-cooled type furnishes a dominantly long-wave-length spectrum, due to the dense cloud of mercury vapor which envelopes the central luminescent beam, through

TABLE V—*Results with ultraviolet radiation combined with canine distemper mixed bacterin in the treatment of canine distemper (Patton)*

CASE NO.	BREED	AGE (MOS.) *	TREATMENT						RESULTS
			BACTERIN			RADIATION			
			1ST DOSE (CC)	2ND DOSE (CC)	3RD DOSE (CC)	EXPOSURE (MINUTES)	HEIGHT (INCHES)	TREATMENT (NUMBER)	
16398	Poodle	5	1	1	1	20	36	7	Discharged
16448	Police	5	1	1	1				Died
16457	Poodle	6				20	36	15	Died
16456	Fox Terrier	4	1	1	1	20	36	10	Died
16446	Fox Terrier	5	1	1	1				Died
16436	Police	4				20	36	6	Died
16213A	Pekingese	4	1	1	1	20	36	12	Died
16338	Boston	4	1	1	1				Died
16417	Poodle	6				20	36	7	Died
16213B	Pekingese	4	1	1	1	20	36	12	Discharged
16086	Pekingese	5	1	1	1				Died
16543	Pekingese	4				20	36	4	Died
15997	Pekingese	10	1	1	1	20	36	10	Discharged
15470	Pekingese	9	1	1	1				Died
16463	W.H.Fox Ter.	8				20	36	6	Died
16408	Irish Ter.	5	1	1	1	20	36	8	Discharged
16584	Boston	6	1	1	1				Discharged
16483	Boston	4				20	36	7	Died
16496	Irish Ter.	8	1	1	1	20	36	15	See note 1
15964	Police	10	1	1	1				Discharged
16507	Pomeranian	7				20	36	8	Died
16438	Police	8	1	1	1	20	36	10	Died
16487	Police	9	1	1	1				Died
16441	Police	10				20	36	15	Discharged
16535	Poodle	8	1	1	1	20	36	18	Discharged

*Estimated.

TABLE V—*Results with ultraviolet radiation combined with canine distemper mixed bacterin in the treatment of canine distemper (Pallon) (Continued)*

CASE NO.	BREED	AGE (MOS.) *	TREATMENT						RESULTS
			BACTERIN			RADIATION			
			1ST DOSE (CC)	2ND DOSE (CC)	3RD DOSE (CC)	EXPOSURE (MINUTES)	HEIGHT (INCHES)	TREATMENT (NUMBER)	
16529	Boston	9	1	1	1				See note 2
16534	Chow	6				20	36	10	Died
Stray	Peke-Griffon	8	1	1	1	20	36	15	Discharged
16123	Chow	7	1	1	1				Discharged
16545	Poodle	8				20	36	7	Died
16333	Irish Ter.	5	1	1	1	20	36	10	Discharged
16539	Poodle	5	1	1	1				Died
16580	Poodle	6				20	36	6	Died
16685	Police	9	1	1	1	20	36	12	Discharged
16583	Police	8	1	1	1				Died
16593	Chow	6				20	36	6	Died
16624	Boston	6	1	1	1	20	36	6	Died
16630	Poodle	6	1	1	1				Discharged
16619	Collie	8				20	36	8	Died
16661	Boston	12	1	1	1	20	36	10	Discharged
16633	Poodle	18	1	1	1				Died
16634	Poodle	12				20	36	4	Died
16669	English Bull	14	1	1	1	20	36	10	Discharged
16610	W.H.Fox Ter.	15	1	1	1				Died
16617	Police	14				20	36	10	Discharged
16692	Brindle Bull	7	1	1	1	20	36	10	Discharged
16628	Pomeranian	8	1	1	1				Discharged
16420	Police	7				20	36	5	Died
16589	Collie	5	1	1	1	20	36	18	Discharged
16749	Police	4	1	1	1				Died

*Estimated.

TABLE V—*Results with ultraviolet radiation combined with canine distemper mixed bacterin in the treatment of canine distemper (Pallon) (Continued)*

CASE NO.	BREED	AGE (MOS.) *	TREATMENT						RESULTS
			BACTERIN			RADIATION			
			1ST DOSE (CC)	2ND DOSE (CC)	3RD DOSE (CC)	EXPOSURE (MINUTES)	HEIGHT (INCHES)	TREATMENT (NUMBER)	
16787	Boston	8				20	36	16	Died
16747	Chow	8	1	1	1	20	36	15	Discharged
16731	Eskimo-Spitz	8	1	1	1				Discharged
16785	Police	5				20	36	14	Discharged
16771A	Police	10	1	1	1	20	36	10	Discharged
16771B	Police	10	1	1	1				Died
16552	Bull	12				20	36	12	Discharged[3]
16861	Poodle	11	1	1	1	20	36	10	Discharged
16754	Poodle	10	1	1	1				Discharged
16557	Police	8				20	36	10	Discharged

*Estimated.

1. Recovered from distemper but later developed paralysis.
2. Recovered from distemper, but later developed chorea.
3. Later suffered a relapse and still ill at time of writing.

TABLE Va—*Summary of results tabulated in table V*

TREATMENT	TREATED	LIVED	DIED
Radiation plus bacterin	20	16	4
Bacterin only	20	8	12
Radiation only	20	5	15

which the short waves must be filtered before emitting from the fused quartz burner.

In the water-cooled type, the mercury mantle is quickly condensed, leaving the ultraviolet energy free to issue from the quartz lamp without previous filtration through mercury vapor. On the basis of the physical differences and from the findings of various workers, a comparison of the two energies is shown in table VII.

TABLE VI—*Resistance of the hair-coat in dogs to the penetration of ultraviolet radiation (one treatment).* (*Patton*)

CASE NO.	BREED	AGE (MONTHS)†	DISTANCE (INCHES)	EXPOSURE (MINUTES)	PART IRRADIATED	TIME OF EXAMINATION AND DEGREE OF ERYTHEMA			
						IMMEDIATELY	AFTER 4 HRS.	AFTER 10 HRS.	AFTER 24 HRS.
16598	Police	4	15	60	R. flank	None	Very Slight*	Same	Same
16598	Police	4	6	30	L. flank	None	Very Slight*	Same	Same
16514	Fox Ter.	6	36	60	R. flank	None	None	None	None
16617	Police	8	24	20	L. flank	None	None	None	None
16617	Police	8	12	20	R. flank	None	None	None	None
15967	Police	10	36	20	Lumbar	None	None	None	None
15967	Police	10	15	60	Lumbar	None	None	**	None
16345	Poodle	9	30	30	Lumbar	None	None	None	None

†Estimated.
*First degree.
**No observation.

TABLE VII—*Comparison of ultraviolet energy (mercury quartz) of air-cooled and water-cooled lamp. (Pacini)*

AIR-COOLED	WATER-COOLED
Near ultraviolet intensity	Far ultraviolet intensity
Biologic dominantly	Bactericidal dominantly
Chemically oxidizing	Chemically reducing
Relatively penetrating	Relatively superficial
Metabolic synergist	Metabolic depressor

FIG. 2. Treater complete.

TECHNIC

Position of the lamp: We have found that the most convenient method of installing the lamp is to have it suspended from the ceiling, either counterbalanced over pulleys, or hooked into the links of a chain.

Administration of treatment: A platform, built at a comfortable height, or an enclosure sufficiently large to accommodate a few

dogs, is necessary. Any restraint necessary in administering the first treatment will soon be replaced by the complete satisfaction shown by the patients, as the rays have a soothing effect. Some of our dogs will bask under the rays, of their own free will, if allowed this privilege. It has been found advisable to protect the eyes of the dogs during radiation, as well as those of the operator, with suitable smoked goggles, or bookkeeper's eye-shades.

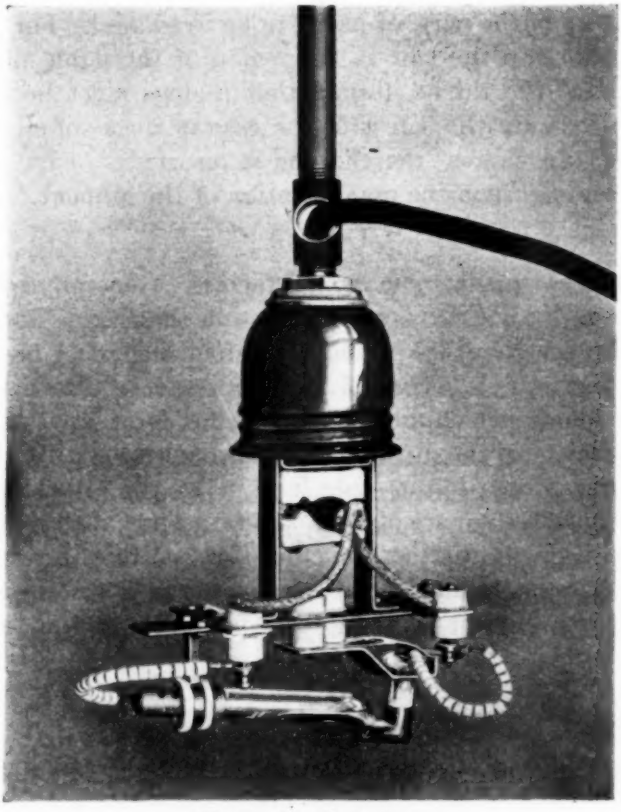

FIG 3. Detail of uviarc.

Severe burns, such as sometimes occur as a result of galvanic, faradic or diathermic treatment, are unknown with ultraviolet radiation. In fact the writer has been unable to produce more than a second-degree erythema, in the case of dogs, and then only on shaved areas, following repeated exposure at short distance (18 inches). Areas surrounding those irradiated showed only a very mild erythema.

As there is some doubt regarding the penetration of the rays, in the case of dogs, especially in the case of the long-haired breeds, we find it prudent, in short-haired dogs, to wet the coat and comb it the wrong way during radiation, in order to facilitate the utmost penetration of the rays to the skin.

There is little doubt, in the case of some dogs, that the hair-coat interferes with the absorption of the rays. According to the photochemical absorption law of Grotthus, only the rays absorbed are effective in producing chemical changes.

It is our practice to clip such dogs over a portion of the body, depending upon the part, or parts, to be irradiated. For general radiation, we clip the hair in the region of the flank, abdomen and inside of the thighs, feeling that if dogs must be clipped, these portions are the safest in the case of dogs suffering from distemper. In chorea, the clipping is resorted to over a wider area, depending upon the manifestation of the ailment.

Dosage

The dosage depends upon several factors. Generally speaking, dogs of a dark color stand more radiation than light, fine-haired ones. The sensitiveness of the individual dog must be considered, as dogs vary considerably in this respect. Breed and age are other factors which must be given consideration.

The intensity of the ultraviolet radiations varies with distance, in the same proportion as does light, *i. e.*, the intensity varies inversely with the square of the distance. Thus, if the radiations falling on a given area, at a distance of one foot, are taken as one, the amount falling on an equal area, at a distance of two feet, will be a quarter, at three feet, one-ninth, and at four feet, one-sixteenth.

Position of the Patient

Whenever possible, the dog should be so placed that the rays strike at right angles the part which is being irradiated, as intensity is lost if the angle of incidence is less (cosine law). The time of exposure must be regulated in proportion to the angle of incidence.

The lamp should be allowed to operate for at least ten minutes (this varies with different types of lamp) before the treatment is commenced, in order to secure the maximum of beneficial radiation.

Voltage: Depending upon the electric pressure that the impressed current assumes in the mercury arc, the intensity of the

various spectral regions varies; under the operating voltage of 70 volts across the burner, that portion of the biologic spectrum most necessary in metabolism uplift is especially brilliant.

TABLE VIII—*Showing intensity varying with the angle of incidence. (Pacini)*

ANGLE OF INCIDENCE (DEGREES)	INTENSITY %
90	100.0
85	99.6
80	98.7
75	96.6
70	93.9
65	90.6
60	86.6
55	81.9
50	76.6
45	70.7
40	64.2
35	57.3
30	50.0
25	42.0
20	34.2
15	25.8
10	17.3
5	8.7
1	1.7

For this reason the biologic air-cooled lamp should be operated at 70 volts. It happens that when operated under these conditions, a certain number of wave-lengths shorter than 2600 Angström units are emitted. These shorter rays being antagonistic to the longer and more penetrating wave-lengths, some provision should be made to minimize their effect. This is accomplished by increasing the distance between the tube and the surface radiator, thus using the air, in the intervening space, as a filter for the shorter rays.

Distance: When the maximum biologic effect is desired, with a voltage of 70 volts across the burner, the tube-skin distance appears adequately satisfactory at 30 inches.

Histologically, the various degrees of erythema correspond with certain important cellular activities, somewhat as shown in table IX.

TABLE IX—*Relation of degree of erythema to histophysiology. (Pacini)*

DEGREE OF ERYTHEMA	DESIGNATION	HISTOPHYSIOLOGY
1st — Mild	Stimulative	Stimulative
2nd — Moderate	Regenerative	Regenerative
3rd — Intense	Desquamative	Desquamative

Skin reactivity is a complicated phenomenon, depending upon many factors, especially: (1) the endocrine status of the individual; (2) the region of the irradiated area; (3) the thickness of the skin; (4) the capillary distribution of blood; (5) sex; (6) age; (7) pigmentation; (8) hair-coat.

For stimulative erythema a voltage at 70, with tangential angle of illumination, 30 inches, in the case of dogs, appears to represent a good working distance.

Time: In ultraviolet radiation, the application time is measured by the amount of erythematous action that ensues. When a skin surface is exposed to ultraviolet radiation, a biologic phosphorescence appears after a latent period (2 to 8 hours), depending on the intensity. At first, under short periods of radiation, the reddening is pale. More prolonged radiation produces various degrees of erythema up to a scarlet coloration accompanied by small vesicles.

Frequency of application: There is a cogent rule in modern ultraviolet radiation that determines the frequency of application: "Ultraviolet therapy is successful in proportion as the desired physiologic action, through use of the radiation initiated and maintained."

For stimulative ultraviolet radiation, the reaction sought is a first-degree erythema (stimulative). As soon as this degree of erythema is observed to disappear, the biophysical effects of the biologic phosphorescence are spent and it is time for a second treatment. In general, this varies from 24 hours to several days.

Variations in Methods of Ultraviolet Application

The changes produced by radiation, in its passage from the arc to the surface radiated, may vary according to: (1) initial energy intensity (wattage); (2) distance of the tube (inverse-square law); (3) inclination of the exposed surface to the direction of the central ray (Lambert cosine law); (4) dominant wave-lengths of the source (long air-cooled and short water-cooled); (5) time of the exposure; (6) reaction sought.

The therapist need realize only certain fundamental premises, as above outlined, from which there may be deduced a tangible working basis as follows: For the air-cooled lamp, representing the longer wave-lengths unimpaired by passage through air:

A. Superficial biophysical action.

B. Deeper biophysical action.

Superficial biophysical activity is confined to the skin layers. It is desired here to produce the quickest result in the shortest interval of time, for which there may be used:

(a) High voltage (wattage intensity).
(b) Short tube-distance.
(c) Short time-exposure.

For instance: volts, 90; distance, 6 to 10 inches; time, 2 to 5 minutes, depending on the reaction sought. This insures the expenditure of the energy on the skin surface, minimizes the amount absorbed by the blood- and lymph-streams, and practically eliminates "systemic" effects.

Deeper biophysical action is secured by irradiating a surface for a longer time, with the view to affecting particularly the blood and lymph, in which case we recommend:

(a) Low-voltage intensity.
(b) Long, tube-lesion distance.
(c) Long time-exposure.

For instance: volts, 70; distance, 30 to 36 inches; time, 15 to 20 minutes. Here the skin reaction is minimized, so that the fluids of the area receive the greatest amount of radiation. Any tolerance which occurs as the result of pigmentation will have to be compensated for by longer exposure. It is not advisable to compensate for this loss by shortening the tube-skin distance, as this changes the spectral value.

Treatment of Various Pathological Conditions in Humans

Fractures: During the period of growth, when the epiphyses become united to their regional bone, the blood-serum is found to contain much calcium and phosphorus, as compared with the quantity present in later life. In early childhood, the phosphorus reaches about 6 milligrams per 100 cc of serum, dropping year by year until, at the age of 26 and onward, a low level of 2 or 2.5 milligrams is maintained.

Tindall and Harris[8] point out that there is an increase in the amount of phosphorus in the serum of dogs following fractures. In open fractures, where union is hindered by septic interference, the use of the biologic, air-cooled, quartz lamp is indicated, as this agency increases the phosphorus-calcium content of the blood and, in addition, the radiation is bactericidal in its action. The mechanism whereby ultraviolet radiation increases the calcium and phosphorus content of the blood is not well understood,

though this lack of understanding in no way interferes with the clinical usage of ultraviolet radiation.

Skin diseases: The great value of ultraviolet radiation in dermatology is due to its bactericidal effect, to its stimulating action on cellular growth and directly to the raising of the resistance of the body.

Some of the human conditions reported by Russel and Russell[2] as showing improvement with ultraviolet radiation are: pruritus, septic wounds, dermatitis, eczema, erythema, herpes, urticaria, seborrhoea, psoriasis, acne, alopecia, furunculosis and ulcers.

Respiratory diseases: Asthma, catarrh, whooping cough and common colds.

Circulatory diseases: Anemias and myocarditis.

Diseases of the alimentary canal: Constipation, gastritis and enteritis.

Genito-urinary diseases: Gonorrhea, leucorrhea, metritis, nephritis, prostatitis, ovaritis and nervous affections of the menopause.

Diseases of the nervous system: Neurasthenia, neuritis, sciatica, hysteria, insomnia, locomotor ataxia, myelitis and nervous debility.

Diseases of the special senses: Eye—iritis, opacities of cornea, ulceration of cornea. Ear—purulent discharges. Throat—laryngitis, pharyngitis, pyorrhea, tonsilitis. Miscellaneous—chronic infections, auto-intoxication, chorea, rickets, rheumatism.

Treatment of Pathological Conditions in Dogs

Chorea: This disease, in human patients, is reported to be benefited by radiation. However, the writer, working on some twenty-five cases of chorea in dogs, secured varying results, mostly negative, except in three cases, where radiation apparently was helpful, especially in reducing the muscular atrophy associated with chorea.

Distemper: Ultraviolet radiation is reported by Bullard and Frick[3] to be directly beneficial in distemper. The writer, working with some 75 dogs, chosen from several hundred cases of distemper, reports the results of these experiments in table X. From these results it would appear to have no beneficial specific therapeutic value.

Some of the conditions associated with distemper, treated by the writer with apparently beneficial results, are opacities and ulceration of the cornea and trachoma. In the treatment of eye

TABLE X—*Results with ultraviolet radiation in the treatment of canine distemper. (Patton)*

CASE NO.	BREED	AGE (MOS.)	TREATMENT			RESULT
			EXPOSURE (MINUTES)	DISTANCE (INCHES)	TREATMENT (NUMBER)	
15539	W.H.Fox Ter.	4				Died
15538	Schipperke	12	15	24	10	Discharged
15421	Pinscher	10				Discharged
15367	Police	8	15	24	10	Died
15585	Pekingese	7				Discharged
15500	Airedale	4	15	24	10	Discharged
16185	Police	14				Discharged *
16253	Collie	24	15	24	8	Died
16227	Police	10				See note 1
16267	Police	10	20	18	4	Died
15296	Pomeranian	10				Discharged *
15111	Poodle	11	20	18	15	Discharged *
15993	Collie	10				Discharged *
16063	Police	9	15	18	18	Discharged *
16065	Police	4				Discharged
16019	Pomeranian	12	15	18	12	Discharged
16122	Police	10				Died
16075	Police	8	20	18	9	Died
16062	Poodle	6				Died
16048	Peke-Griffon	5	20	18	19	Died
16022	Police	8				Died
16027	Police	7	20	18	9	Died
16035	Collie	8				Died
16031	Pt. Collie	10	15	12	7	Discharged
16169	Poodle	12				Discharged
16192	Poodle	16	15	18	12	Died
16262	Poodle	8				Died

*Discharged though still confined in the hospital.

TABLE X—*Results with ultraviolet radiation in the treatment of canine distemper. (Patton) (Continued)*

CASE NO.	BREED	AGE (MOS.)	TREATMENT			RESULT
			EXPOSURE (MINUTES)	DISTANCE (INCHES)	TREATMENT (NUMBER)	
16243	Irish Ter.	6	20	24	12	Died
16093	Airedale	12				Discharged *
16250	Airedale	6	20	24	12	Discharged *
16257	Police	12				Died
16266	Police	14	20	24	10	See note 1
16218	Police	6				Died
16263	Police	7	20	24	14	Died
15807	Chow	9				Died
15862	Police	10	20	18	21	Discharged
15235	Poodle	8				Discharged *
15301	Poodle	6	15	24	30	Discharged *
16308	Police	4				Discharged
16387	Chow	6	20	18	6	Died
16341	Pomeranian	4				Died
16323	Pekingese	8	20	18	15	Discharged
16303	Poodle	8				Died
16370	Poodle	8	20	18	10	Discharged
16357	Irish Ter.	6				Died
16391	Fox Terrier	9	20	18	3	Died
16307	Pinscher	10				Discharged
16339	Mongrel	8	20	18	18	Died
16432	Black dog	8				Discharged
16411	Black dog	6	20	18	3	Died

*Discharged though still confined in the hospital.
1. Recovered from distemper, but later developed chorea.

conditions by radiation, great care must be exercised to prevent over-exposure. The writer's results were secured by exposures of from 30 seconds to 2 minutes, at 24-inch tube-cornea distance.

Skin diseases: Eczema and the ulcerative skin condition associated with distemper appear to be benefited by radiation.

TABLE Xa—*Summary of results of treatment tabulated in table X.*

TREATMENT	TREATED	LIVED	DIED
Irradiated	25	12	13
Not irradiated	25	13	12

In the mild cases a first-degree erythema is all that appears necessary, whereas, in the more chronic cases, a second or third degree is required. It is necessary to have the areas to be irradiated free from scurf, excretions, dirt, grease and so forth. Tube-skin distance, 6 to 10 inches; exposure, 2 to 5 minutes; voltage, 90. After 7 to 10 treatments the case generally shows marked improvement.

DISCUSSION

It would appear that while ultraviolet radiation is not by any means a panacea, it is a valuable addition to our medical armamentarium, because of its wide reactional scope. New uses are constantly being found for the rays in the commercial world, as well as in the field of medicine. Much information remains to be revealed before recommending radiation to the veterinary therapist. However, for the experimental worker, much remains to be accomplished.

CONCLUSIONS*

(1) Ultraviolet radiation apparently has no direct beneficial therapeutic value in the treatment of so-called distemper in dogs.

(2) Chorea apparently is little benefited by radiation; neither do the rays appear to prevent dogs, suffering from distemper, from later developing chorea.

(3) The antigen-antibody phenomenon would appear to be slightly assisted by radiation.

(4) The hemoglobin content of the blood would appear to be raised by radiation, as are also the cellular constituents, with the exception of the polymorphonuclear leucocytes, which show an actual decrease.

(5) The hair-coat, at least in the heavier and long-haired breeds, would appear to retard penetration of the rays to the skin of dogs.

*Based on the use of the biologic, air-cooled, mercury-vapor, quartz lamp (Avian poultry treater).

ACKNOWLEDGMENT

The work reported in this paper was conducted in the Ellin Prince Speyer Hospital for Animals, New York City, in cooperation with the New York Women's League for Animals, Inc.

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LAUNDRY PAYS TRIBUTE TO HORSE IN COPY

Just before the annual dinner of the Road Horse Association of New Jersey, an organization of lovers of the harness race horse, the Imperial Laundry Company, of Newark, New Jersey, used space in newspapers to pay a tribute to the horse.

A part of the text praised the Road Horse Association of New Jersey and told of the work that the association is doing to keep up interest in the horse by the matinee races which it sponsors at Newark. The laundry explained that it takes pride in the work of the association because the officers of the laundry are actively connected with it.

The remainder of the advertisement discusses horses in general, the horses that the laundry has used in the past and present and the race record of Peter Etawah, 2.04¼. Peter Etawah is owned by the officers of the Imperial Laundry. At the top of the advertisement a picture of the finish of a race, which Peter Etawah won, is reproduced.

—*Printers Ink*

They continue to speak the "langwidge" in some parts of Tennessee, as indicated by a business card in the Sparta (Tenn.) *News* recently:

"Hoss Doctor. Call Marchbank's Drug Store."

OUR SWEDISH COLLEAGUES

By C. A. NELSON, *Brainerd, Minn.*

Very little information as to the character of veterinary service in Sweden has ever appeared in American literature. Probably this is due partly to modesty and partly to the fact that more of the work of Swedish veterinarians has found its way into German and French rather than American literature.

A visit to Sweden will convince the most skeptical that our colleague over there is really the most hospitable host to be found anywhere. Generally, politeness and courtesy are national habits. The visitor is addressed by title in the third person, hats are raised to acquaintances, men or women, with courtly bows. If walking, the visitor is always escorted part way back by the host or hostess. This in no way applies to strangers. Because of an inborn trait of not wishing to intrude or offend, strangers are severely ignored. It would be possible to travel from one end of the country to the other without being spoken to, should one so desire. But, after the stranger has made the first advance and presented his credentials, there is no lack of courtesy. An American would think it highly exaggerated but, as before stated, it is a national trait and not a calculated or studied courtesy.

The Swedish veterinarian is a polished gentleman, in the highest sense of the word. This does not imply that he belongs to the leisure classes. On the contrary, he is a very concientious, painstakingly hard worker. Naturally this brings out the question as to how these accomplishments are attained. The answer is: rigid requirements and long training, before the position of veterinarian is attained.

The requirements are briefly as follows: Equivalent to our high-school education; nine years' preparatory college course; and not less than five years in the Royal Veterinary High School, provided he is a good student, otherwise, additional years are required. After passing the required examinations, which, by the way, are given orally and intended to search a man's mind for everything contained therein pertaining to veterinary subjects, he must demonstrate, by practical tests in all branches, that he is qualified. Clinics are conducted daily during this course. The student also makes frequent visits about the surrounding country, in company with the professor of the ambulatory clinic, thus acquiring experience in general practice. When

all this is completed, satisfactiorily to the instructors, the title of "veterinarian" is conferred on the student. Should he desire a doctor's degree, he must prepare and publish a thesis on some scientific subject, in one of four languages, which must be successfully defended in the Swedish language, before a court and jury of experts on the subject chosen.

It is the writer's understanding that many veterinarians do not take this last step. After receiving the title of "veterinarian," he is entitled to practice his profession, providing he first serves as assistant to some approved practitioner, for at least four months. Having completed the service of assistant, the young veterinarian usually spends some years as "vicarie," or substitute, for some veterinarian on a vacation or, for other reasons, unable to attend to his practice. When, in the course of events, a vacancy occurs in the office of the state, county, provincial, city or army veterinarian, the young Swedish veterinarian finally, in competition with others, applies for the position.

Step by step he finally arrives at a permanent position, where he is allowed a salary for attending to the duties of one of the above-mentioned offices. He may also conduct a private practice, for which fees are collected according to a set schedule. It would appear like a long, tedious journey to this first post, but when he finally arrives, there is no question as to his qualifications. The public recognizes his worth and knows that they may confidently seek his services, and that such services will be ably rendered at a fixed schedule of prices, none of which are prohibitive.

The established veterinarian enjoys the support of the state, county, province or city he serves, in addition to a gainful practice, which no one begrudges him, as he is deemed to be indispensable to agriculture, as well as to the public health.

He generally maintains his office and residence on the same premises, has certain office hours in the forenoon, and groups his calls, as much as possible, so that a number may be made on one journey in the afternoon. Wherever possible, the telephone is used to keep in touch with his office, so that more urgent calls may be attended to.

The Swedish veterinarian also finds time to attend to his social duties, as he is a much respected member of society, with a traditional position to maintain, all of which is taken very seriously. All these environments tend to a high sense of duty and responsibility. Hard work seems to become a habit and,

after a period of life well spent, he is granted a pension. He is seldom wealthy, unless wealth is inherited, because his earnings are generally used up in maintaining his social position.

The writer was delightfully entertained, and treated as a distinguished guest, at the home of Professor and Mrs. John Vennerholm, and also by Professor Swen Wall. The only regret was that my only claim to distinction was membership in the American Veterinary Medical Association and being one of the very few American veterinarians who had ever visited Stockholm.

They were all very much interested in the veterinary progress in America and asked to have their good wishes and greetings conveyed to the A. V. M. A. The Royal Veterinary High School is a splendid institution, of which any nation might be proud, and is well worth a visit from any American veterinarian. It is indeed a rare privilege to enjoy the hospitality so heartily extended by the veterinarians in the "Land of the Midnight Sun."

HE WAS A COWMAN

His hoss went dead an' his mule went lame;
He lost six cows in a poker game;
A harricane came on a summer's day,
An' carried his house whar' he lived away;
Then a airthquake come and when that wuz gone,
An' swallered the lan' that the house stood on!
An' the tax collector, he come roun'
An' charged him up for the hole in the groun'!
An' the city marshal—he come in view
An' said he wanted his street tax, too!

Did he moan an' sigh? Did he set an' cry
An' cuss the harricane sweepin' by?
Did he grieve that his ol' friends failed to call
When the airthquake come an' swallered all?
Never a word o' blame he said,
With all them troubles on top his head!
Not him. . . . He clumb to the top o' the hill—
Whar' standin' room wuz left him still,
An' barin' his head, here's what he said
"I reckon it's time to git up an' git;
But, Lord, I hain't had the measles yit!"

—Frank L. Stanton in *The Cattleman*

CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

A CASE OF LYMPHOID LEUKEMIA IN THE PIG

By H. E. BIESTER *and* S. H. MCNUTT

Department of Veterinary Investigation, Iowa State College, Ames, Iowa

In view of the nature of this process and the paucity of case reports dealing with it, a description of the case was suggested. In addition to the subject described in this report one of us encountered a similar case in the pig, several years previously.

Nothing certain can be said regarding the etiology of leukemia. Cultural and transmission attempts have not contributed much towards a better understanding. It is generally assumed that this process is of a toxic-infectious origin. Ellerman and Bang recorded observations tending to support that hypothesis. However, the pathology indicates that a hyperplasia of the lymphadenoid or myeloid tissue takes place with simultaneous or subsequent flooding of the blood with lymphocytes or leucocytes, depending upon the structures primarily involved.

A considerable number of classifications of leukemia have been made by various workers. These can be found in the standard texts on pathology and medicine.

History: Seventeen younger pigs were placed with older ones. Older pigs fought the younger and drove them out of the sleeping-quarters. The owner thought this subject had developed pneumonia, due to exposure, or had been injured. One other pig took sick about one week before but had nearly recovered. The subject reported herein was sick three weeks, had eaten regularly, but gradually became weaker and, when submitted to this Laboratory, staggered. The subject did not appear emaciated; the abdomen was rounded. Weight, 80 pounds. Temperature, 99.8° F.

Unfortunately a complete blood-examination was not made before the subject was destroyed. After the abdominal cavity was entered and the nature of the process ascertained, differential

smears were made from the heart-blood, revealing an abnormally large number of white cells of the lymphatic type. Histological sections showed the blood-vessels filled with an unusually large number of lymphocytic cells, many times out of proportion to the number of erythrocytes. The leukemic cell involved in

FIG. 1. A, gastric and hepatic lymph-nodes; B, stomach; C, spleen (six-inch ruler on surface); D, kidney showing hemorrhages, represented by black areas; E, splenic lymph-nodes.

this process was slightly larger than the small lymphocyte, which observation is recorded in most acute cases of lymphoid leukemia.

Lymph-nodes in general: *Gross*: All were tremendously enlarged, containing considerable fluid. Only a few showed con-

gestion or hemorrhage. Gross foci of necrosis were observed. In the case encountered several years previously the lymph-nodes were similarly enlarged and appeared as though completely painted a bright red. On the cut surface a narrow zone of hemorrhage, around the periphery, under and near the capsule, was present, and often in addition to this alteration appeared ir-

FIG. 2. A, liver showing heavy interlobular structures accentuated as a result of leukemic cell invasion; B, lymph-nodes; C, kidney showing uneven surface and hemorrhages under capsule and in deeper structures.

regular bands and fields of hemorrhage throughout the deeper portions.

Gastric and hepatic lymph-nodes: *Gross*: These structures were tremendously enlarged, and together weighed 750 grams,

comprising 1.9 plus per cent of the body-weight. Their bulk was over 75 per cent of that of the filled stomach. The gastric and hepatic lymph-nodes taken from a 100-pound hog weighed

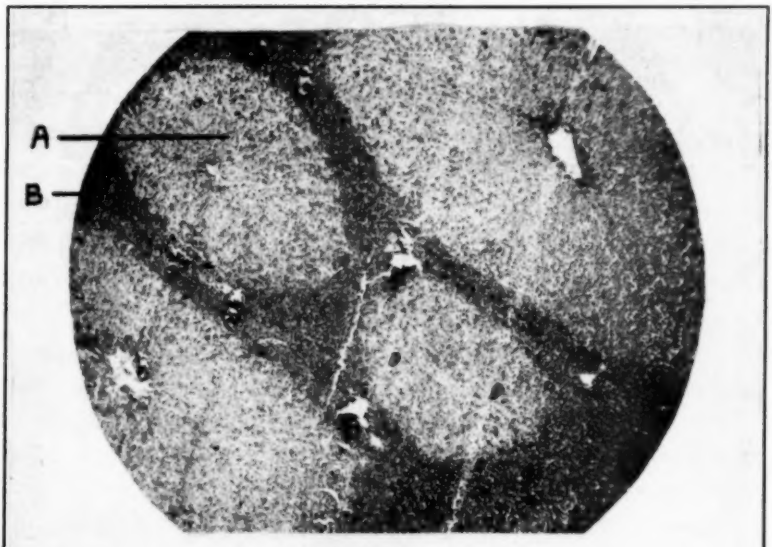

Figure 3

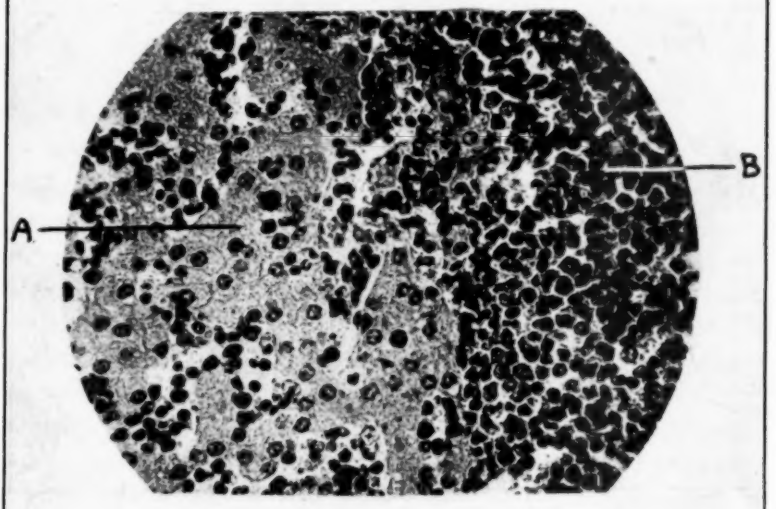

Figure 4

FIG. 3. Liver. Lobules in early stage of leukemic involvement. A, liver lobule showing some leukemic cells invading between hepatic cords; B, interlobular tissue invaded by leukemic cells. x 13.

FIG. 4. Liver. A, periphery of hepatic lobule remnant showing epithelial cells involved by retrograde processes; B, dense masses of leukemic cells encroaching. x 300.

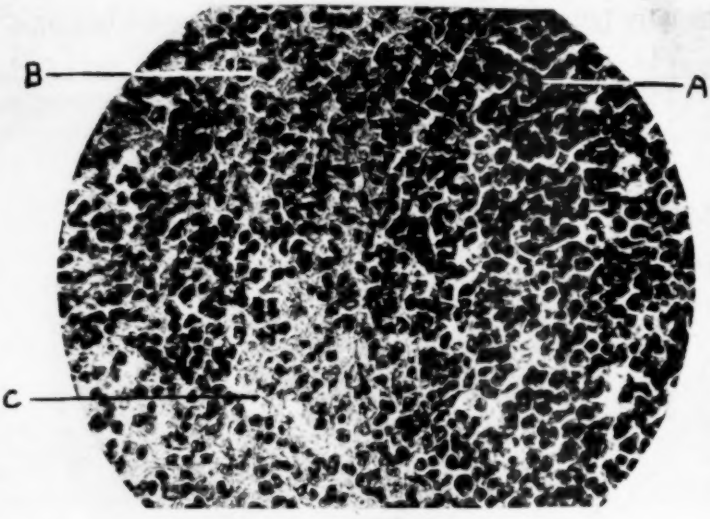

Figure 5

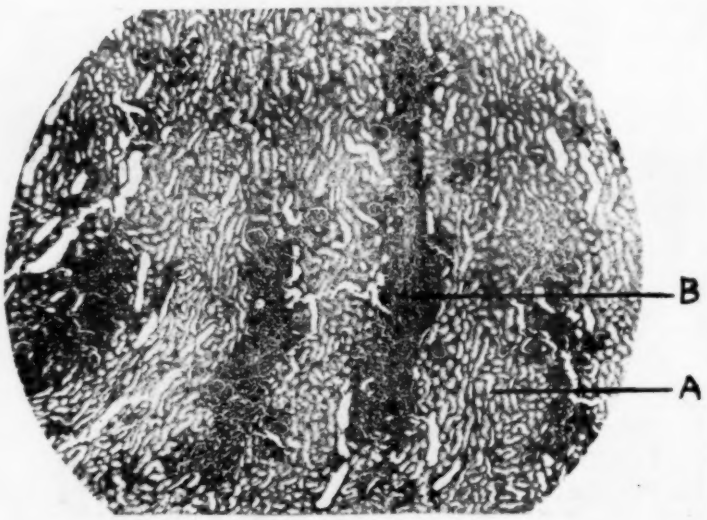

Figure 6

FIG. 5. Spleen. Splenic structures practically replaced by leukemic cells. A, masses of leukemic cells; B, similar to A with red blood-cells interspersed (red cells photographed gray); C, field of red cells with leukemic cells throughout. x 300. Lymph-nodes appeared similar to field A—i. e., nearly uninterrupted mass of leukemic or lymphocytic cells.

FIG. 6. Kidney. A, renal structure undergoing retrograde processes; B, fields of infiltrated cells. x 13.

20 grams, being .04 per cent of the body-weight. Based upon this data, these nodes from the leukemia subject were 47 times heavier than the normal.

Microscopic: Lymphoid hyperplasia. Lymph-node structures nearly effaced and displaced by an even, diffuse mass of lymphoid cells. Lymph nodules were absent. Microscopic foci of hemorrhage and necrosis noted.

Splenic lymph-nodes: *Gross*: Enlarged to ten or more times their normal size.

Microscopic: Like the nodes of the stomach and liver, these were characterized by complete obliteration of lymph-node structures and presented nearly solid masses of lymphoid or leukemia cells.

Spleen: *Gross*: This organ was greatly enlarged, weighing 1350 grams, constituting 3.5 per cent of the body-weight. Its length was 52. cm. and the greatest width was 12 cm. Published figures for comparative data on the spleen were not available. A somewhat enlarged spleen from a 100-pound pig weighed 145 grams, comprising .3 per cent of the body-weight. Its length was 30 cm. and width 5.6 cm. Based upon these figures the spleen from the leukemia case was over eleven times heavier than that of the control.

Microscopic: Diffuse leukemic involvement with complete displacement by lymphocytic cells. Spleen structures practically obliterated. In this dense mass of leukemic tissue, erythrocytes were interspersed and sometimes appeared in pools.

Liver: *Gross*: This organ was greatly enlarged. It weighed 3500 grams or 9.1 per cent of the body-weight. In a normal subject the liver should be about 4 per cent of the weight of the body. The liver from the subject under discussion was considerably over twice the normal weight. The interlobular tissue, or what appeared to be interlobular tissue in general, was greatly increased. It was characterized by a grayish-yellow color. The reddish-brown tissue of the hepatic lobule was diminished. In some areas the lobular tissue was nearly absent. Large masses of such tissue, often two inches across on cut surface, were scattered throughout the liver. The edges of such areas were not sharp but irregular and usually shaded gradually into the surrounding tissue, in which the interlobular tissue had not encroached upon the lobular tissue to such extent. Discrete nodules of invasion were absent.

Microscopic: Lymphatic infiltration of interlobular tissue encroaching upon and compressing hepatic lobules. In some instances only small traces of lobules remained.

Kidney: *Gross*: Each weighed 225 grams and constituted .58 per cent of the body-weight. In weight and volume the kidneys were practically normal. The normal kidney usually constitutes .5 per cent of the body-weight. As a whole this organ was somewhat lighter in color and covered with diffuse hemorrhages, about ¼ to ½ inch in diameter, which were found throughout the entire organ. Very few petechiae were noted. The surface presented elevations as a result of the superficial parenchymatous hemorrhages raising the surface. The cut surface presented in addition to the hemorrhages described, irregular and indefinite gray areas or foci (leukemic tissue).

Microscopic: Small foci and large fields of leukemic cell invasion and obliteration of tissue with areas of hemorrhage. Epithelial cytoplasm markedly fragmented.

Unfortunately the balance of the carcass was disposed of before a study of the bone-marrow could be made. However, the absence of abnormal numbers of myeloid cells in the blood-stream and tissues with a preponderance of lymphocytic cells reasonably suggests an absence of primary involvement of the bone-marrow.

As a rule, in true leukemia, where the blood-stream possesses an abnormally high leucocyte or lymphocyte content, as distinguished from pseudoleukemia, the body appears quite well preserved. However, in some instances emaciation may be very marked, while at other times the body fat may be increased and be the seat of petechial hemorrhages. Hemorrhages are common in tissues invaded by the leukemic cells.

A diagnosis of lymphoid leukemia was made, based upon the following features:

1. Hyperplasia of lymphoid tissue, with an absence of discrete tumor formations originating in various locations and invading tissues.
2. Lymphoid infiltration of other organs, without discrete tumor formations.
3. Abnormal proportion of white cells (lymphocytic cells) to red cells.
4. Characteristic hemorrhages found in structures invaded by lymphocytic cells.

MALIGNANT TUMOR OF THE EYE, WITH EXTENSIVE INVOLVEMENT OF OTHER ORGANS IN A COW

By ANDREW UREN, *Springfield, Mo.*

Missouri Agricultural Experiment Station
University of Missouri

The subject of malignant tumors in bovines may not be of great interest to many veterinary practitioners, since such conditions are not of frequent occurrence in comparison with the general run of clinical cases. The fact, moreover, that a cure of such conditions is always doubtful tends to lessen the interest of the busy practitioner in such cases.

There are, however, two aspects of this subject to which every practitioner should give special attention, namely, *diagnosis* and *prognosis*, since the ability to distinguish between a benign and a malignant growth, and to make a safe prediction as to the outcome may prevent embarrassment to the practitioner and sore disappointment to the client. It is not always an easy matter to foresee that a slight glandular enlargement in the region of the head or throat, or a small fleshy outgrowth from the conjunctival tissues, resulting apparently from an injury, may later prove to be of a malignant nature. The possibility, therefore, that these growths, which at first appear to be of a simple benign character, may soon develop into intractable malignant tumors, should put one on his guard concerning the diagnosis until a laboratory examination of excised tissues supplies more definite information; or (in the absence of laboratory aid) until the course of the disease itself, under rational treatment, gives definite indications of its true nature. And, as a rule, in the case of a rapidly growing malignant tumor, one does not have to wait long to predict an unfavorable outcome. One should hesitate for a time at least before giving a definitely favorable prognosis.

A case of malignant tumors in a milk cow, that may afford some useful lessons to veterinary practitioners, came under our observation during the past winter. The case illustrates the importance of laboratory service in diagnosis, and caution in prognosis, as well as the value of a careful autopsy. A full history of the case is as follows:

*Presented at the thirty-fifth annual meeting of the Missouri Veterinary Medical Association, St. Louis, May 18-19-20, 1926.

The subject, a ten-year-old cow, cross-bred Jersey and Red Poll, was brought to the Veterinary Department, Dec. 19, 1925, suffering from an affection of the right eye. The first signs of trouble with the eye were observed by the owner about four weeks before the cow was brought to the laboratory. Simple local treatment had been applied by the owner without beneficial results. The animal, moreover, had lost flesh and the milk flow had greatly diminished. The owner stated that the cow seemed to have difficulty in eating, which might account for the loss of flesh.

The eye presented a swollen appearance. The eye-ball and lids were bulged outward as if from pressure behind, in the orbital cavity. The margins of the lids were spread apart and a flesh-like outgrowth from the palpebral conjunctiva protruded prominently from the palpebral opening. A swelling which had not been observed by the owner of the cow was also found in the right parotid region. This swelling extended downward halfway to the angle of the lower jaw. The difficulty in eating reported by the owner was probably due to this swelling, which apparently interfered to some extent with the free movement of the lower jaw.

A tentative clinical diagnosis of malignant tumors, or of actinomycosis, was made. The swelling behind the jaw, similar to a stage in the development of "lump-jaw," and the difficulty in eating, suggestive of "wooden tongue," aroused the suspicion that the trouble might be actinomycosis; although the sarcous outgrowth from the affected eye did not show, macroscopically, the characteristic yellowish granules (clumps of actinomyces) that are usually abundant in the diseased tissues of open actinomycotic lesions No microscopic examination was made at the time.

On account of the age and condition of the cow, and the fact that she was unbred and would be unproductive for several months, even if the treatment should prove successful, the owner requested that the cow be anesthetized and destroyed. He gave permission, however, to use the animal for teaching purposes, provided that all surgical operation should be made painless—a condition that was easy to meet. This animal was therefore retained as a clinic for the special course for graduate veterinarians, and was used by our visiting surgical specialist, Dr. John W. Adams, president of the A.V.M.A., to demonstrate

a number of special points in surgical technic, one of the operations being that of removal of the eye.

A few days later, the cow was chloroformed and a careful autopsy was made. The following autopsy and laboratory notes show the extent and nature of the metastatic involvement of the various organs.

Autopsy Notes

After chloroforming the cow and bleeding thoroughly from the jugular, the skin was removed and all the external lymph-nodes were incised and examined. The enlarged nodes in the right parotid region showed well-marked evidence of pathological changes, indicating sarcomatous involvement. The companion lymph-nodes of the opposite side were less affected, but showed definite changes of the same character.

The lymph-nodes in the thoracic cavity showed extensive tumor proliferations. The anterior mediastinal nodes were very large and exerted considerable pressure on the esophagus. This condition probably accounts to some extent for the digestive and nutritive disturbances reported by the owner. The bronchial group of lymph-nodes at the base of the heart were also affected, as shown in the photographic illustrations (fig.1). The bronchial lymph-node on the left side, situated in the angle between the aortic arch and the left division of the pulmonary artery, was five inches long and two and one-half inches wide; while in the healthy cow of the same size this gland would measure about an inch to an inch and a half in length and about an inch thick. The other bronchial lymph-nodes were similarly affected.

The heart showed extensive sarcomatous involvement, both externally and internally. A large sarcoma was found in the coronary groove on the right side, which growth shows distinctly in figure 1. This tumor was six inches long and four and one-half inches wide. A number of small tumors were also found along the course of the coronary vessels. Internally the right and left auricles were badly obstructed by sarcomatous growths. The largest of these tumors were found at the base of the bicuspid and tricuspid valves. These tumors varied in size from that of a hazelnut to that of a large black walnut. It is hard to realize how the valves could function at all under such conditions. A marked hypertrophy of the muscular walls of the right and left ventricles was found; doubtless due to the function-

al disturbances produced by the endocardial tumors, as well as by pathological cellular infiltration and proliferation in the heart muscle (see figure 2).

In the abdominal cavity most of the lymph-nodes were affected with tumor formations. The right ruminal lymph-gland was about the size of a lemon, while the left and the anterior ruminal

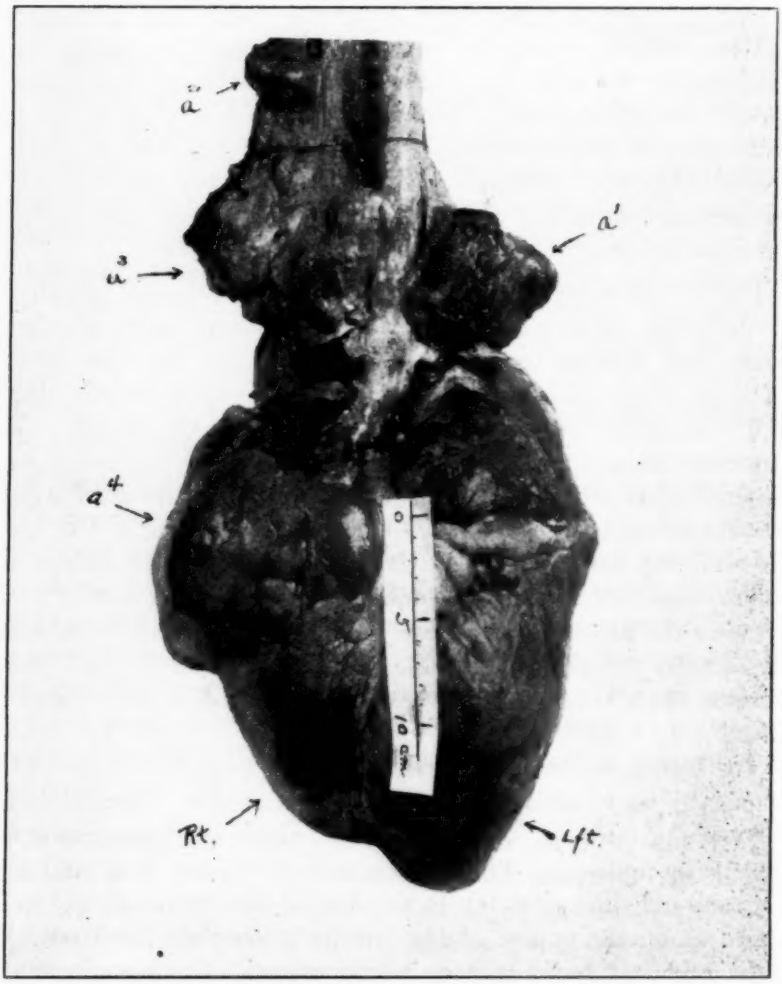

FIG. 1. Showing extensive sarcomatous enlargement of bronchial lymph-nodes (a^1, a^2, a^3) and a large sarcoma in the coronary groove on right side of heart (a^4).

lymph-glands were not so large. The mesenteric lymph-glands were extensively involved. Sarcomatous growths were also found in the wall of the small and large intestines. The omentum also contained nodules of a lymphosarcomatous nature. No

evidence of disease was found in the spleen. In the liver a few small diseased areas were found, which on microscopic examination proved to be sarcomatous.

The kidneys were not involved but the renal lymph-nodes showed a massive, sarcomatous growth. The sarcomatous tumors adherent to the left kidney were even larger than the kidney itself. The tumors attached to the left kidney were also quite large but approximately only a third the size of the tumors attached to the left kidney.

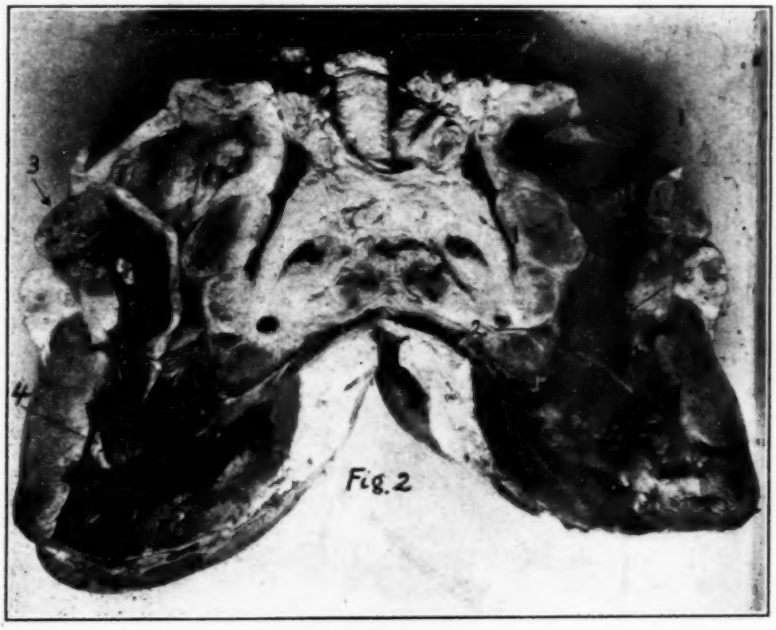

FIG. 2. Section through right auricle and ventricle. 1-1, endocardial tumors in auricle; 2-2 tumor formation on base of tricuspid valves; 3, tumors in heart muscle; 4, muscular pillars involved.

All four quarters of the udder were cut into thin slices and examined carefully without finding any macroscopic areas of disease. However, both the right and left lymph-nodes of the anterior supra-mammary group showed evidence of sarcomatous infiltration, while the more superficial posterior pair appeared to be less involved.

METASTASIS

While the title of this paper carries the inference that the primary focus of the sarcomatous growths in this case was in the eye structures or conjunctival tissues, and may have been

initiated by an accidental injury, and spread from that focus to other organs of the body through the blood and lymph-vessels, we should not overlook the possibility that the alimentary tract could have been the primary focus and that the disease spread from there into the other organs of the body. The alimentary tract of the bovine animal is perhaps exposed fully as much as the eye to irritating influences that would initiate the growth of malignant tumors. But whatever may have been the

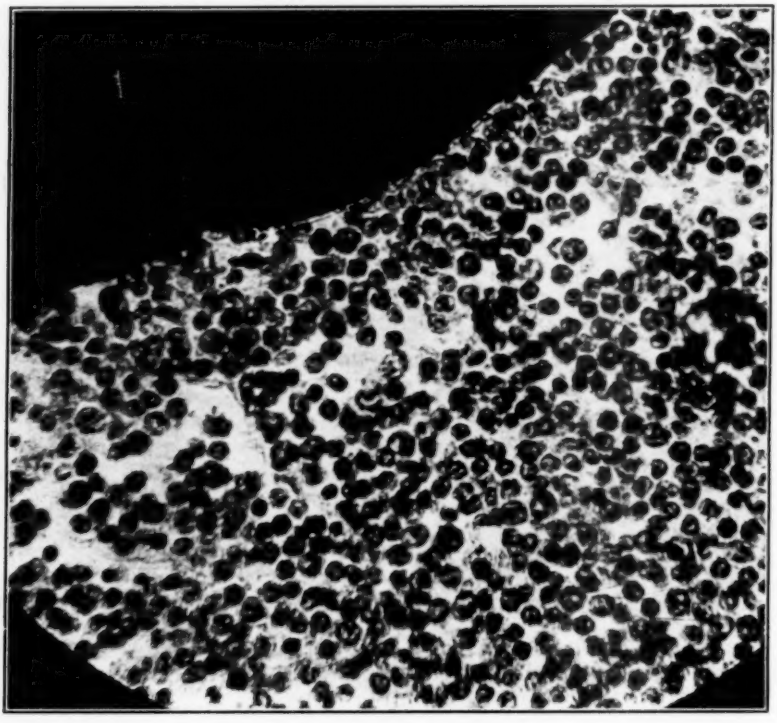

FIG. 3. Section of tumor from orbital cavity, showing scarcity of intercellular stroma and great predominance of small round-cells, many of which show mitosis.

primary focus of the malignant process, this case illustrates quite well a fact in regard to "metastasis" in lymphosarcomata; namely, that while as a rule sarcomata do not spread by lymphatic invasion, but by the blood-vessels, the lymphosarcomata may show extensive spread by both routes. This tendency, mentioned by Ewing in his *Treatise on Tumors*, readily accounts for the extensive invasion of the several lymph-node groups as well as the heart muscle, and the formation of the endocardial tumors.

Microscopic Findings

Blocks of tissue for microscopic sections were prepared from the several affected areas. The examination of stained sections of the several tumors showed the histological structure of *lymphosarcoma* of the small round-cell variety, as shown in the microphotographic reproduction (fig. 3).

A few remarks on the gross appearance of a lymphosarcoma may be of help clinically to the men in the field. The majority of sarcomata are bulky, soft and vascular. In general the bulky character results from the tendency of sarcomata to grow extensively upon the scaffolding of new blood-vessels, rather than to infiltrate preexisting tissues as do carcinomata. The soft consistence reflects the cellular structure of the rapidly-growing tumor. The small round-cell sarcomata are very soft, quickly-growing tumors, which develop particularly in the connective tissue of the motor apparatus and supporting framework, and also in the skin, testicles, ovaries and lymph-glands. (In this case the ovaries were not involved but the heart muscle and lymph-glands were extensively involved.) On gross section the type of sarcoma under consideration appears milky white and occasionally presents caseous or softened areas. When scraped, the cut surface yields a milky fluid. The structure is very simple, the tumor consisting almost wholly of round cells and blood-vessels.

In connection with this subject another point should not be overlooked: The client whose family has been drinking milk from a cow affected in the manner described will naturally feel some concern as to whether the disease is transmissible to the human through the milk; and he will expect an answer from his veterinary advisor. In giving a reply, it is certainly justifiable, in the present knowledge concerning the cause of malignant tumors, and the difficulty of transmitting them, even in the same species, to assure the client that the chances of transmitting this bovine malady to the human species through the cow's milk is indeed very remote. On the other hand, it is the duty of the veterinarian to discourage the use of milk from any cow suffering from any ailment; since the disturbance of the health of the animal from any cause is liable to affect the quality of the milk and render it less wholesome, even though it may not carry any bacterial or cellular element capable of producing a dangerous specific disease.

REVIEWS

THEORY AND PRACTICE OF FOX RANCHING. J. A. Allen, V. S., B. V. Sc., Pathologist in Charge, Fox Research Station, Health of Animals Branch, Canadian Department of Agriculture; and W. Chester S. McLure, M. L. A. (P. E. I.) 248 pages with 27 half-tone illustrations. Published by the authors, Charlottetown, P. E. I., Canada, 1926. Half leather, $5.00.

This is said to be the first book published, dealing exclusively and scientifically with the subject of fox ranching. It has been written primarily for the practical fox farmer, but much of the information contained in the book will be equally interesting and valuable to the veterinarian, not to mention prospective investors in the fur-fox industry.

Chapter I gives a brief history of the fur trade. It is highly entertaining to read of the efforts of the pioneers to establish this comparatively new industry. In the succeeding chapters the authors discuss the development of fox ranching as a practical commercial enterprise, equipment required for an up-to-date ranch, principles of scientific breeding and points in practical breeding.

Chapter VI takes up the subject of fox diseases and is subdivided into nine sections: (1) The Mechanism of the Animal Body, (2) The Fox in Health and Disease, (3) The Rancher's Chief Problem, (4) Parasites, (5) Fox Hookworms, (6) Lungworm Disease, (7) Bladder Worms, (8) Tape Worms, (9) External Parasites.

The following chapters cover the infectious diseases, fox dentistry and surgery, feeds and feeding, marketing and restraint, and other subjects. There is an appendix containing the constitutions and by-laws of the Canadian National, Prince Edward Island and American National Fox Breeders' associations.

Twenty-two pages are required to discuss the subject of fox distemper and its relation to dog distemper, showing the importance of this disease in the industry. Dr. Allen is very frank in his appraisal of the value of biological products derived from *Bacillus bronchisepticus*, both those prepared by commercial houses, as well as those prepared under his personal direction.

Opinions of other authorities are freely quoted and these would be of more value if references were given.

About forty pages are devoted to parasitic diseases, internal and external—a very valuable part of the book. It is here that Dr. Allen reveals to his readers the breadth of his experience in the prevention and control of fox diseases. He is really at home in this chapter.

The book is carefully indexed, well printed and substantially bound. It is a distinct addition to the library of any veterinarian.

DOCUMENTS POUR SERVIR Á L'EDIFICATION D'UNE DERMATOLOGIE ANIMAL (CHIEN ET CHAT). (Skin Diseases of the Dog and Cat.) Ch. Leblois, chef de clinique á l'Ecole Nationale Vétérinaire d'Alfort. 156 pages with 29 figures in the text. Vigot Freres, Paris, 1926. 15 fr.

The material in this book represents the careful sifting of a vast amount of information accumulated by the author, systematically and perseveringly, during a period of six years, at the dermatological clinic at Alfort.

The book is divided into four parts: cutaneous symptomatology, canine nosology, feline nosology, and dermatology and jurisprudence. Part I is divided into: (A) Elementary Lesions and (B) Pruritus. Parts II and III discuss the various diseases, parasitic, infectious and non-communicable. Part IV treats of the legal aspects of skin diseases of the dog.

Among the illustrations are a number of drawings showing the parts of the body, of both the dog and the cat, most frequently affected by mange and eczema; also those parts where either disease may be suspected, calling for a careful differential diagnosis. The reviewer believes that this is the first book devoted exclusively to this subject and it is simply an additional indication of the growing importance of canine and feline medicine. Someone would do well to translate this book into English.

LE CHAT. RACES—ELEVAGE—MALADIES. (The Cat. Breeds —Rearing—Diseases.) E. Larieaux and Ph. Jumaud. 272 pages with 29 figures in the text. Vigot Freres, Paris, 1926. 20 fr.

In presenting this book to the public, the authors are of the opinion that they are rendering a real service, in view of the importance of the cat in America, England and Belgium, as

well as France. In discussing the economic value of the cat, attention is directed to the fact that good feline specimens, at the age of ten to twelve months, frequently command prices ranging from 30 to 40 pounds sterling, and cats that have won championships have changed hands at prices as high as 100 and even 200 pounds ($1000). Reference is made to American cat-farms as well as "kitten raising farms," devoted especially to the scientific breeding of prize felines.

Chapters in Part I are devoted to standards, cat clubs and expositions, anatomy, physiology, habits, breeding and raising, hygiene and feeding. Part II is devoted to the various diseases of the cat. The majority of the illustrations show specimens of the important breeds.

ABSTRACT

THE STANDARDIZATION OF TUBERCULIN. Joseph D. Aronson, Amer. Rev. Tuber. xiii (1926), 3, pp. 2 63-271.

This investigation reports experiments designed to test the possibilities of utilizing intradermic reactions for standardizing tuberculin, in preference to the method based on the toxicity of tuberculin for tuberculous guinea pigs now in general use. The author comes to the conclusion that the intradermic method can be employed for the purpose and suggests the following procedure:

Guinea pigs, preferably of a light color, weighing 350 to 400 gm., are injected intraperitoneally with a weighed quantity of *B. tuberculosis* or with an emulsion prepared from the spleen of a tuberculous guinea pig. Four weeks after infection, the sensitivity of the guinea pigs is determined by injecting 0.001 cc of tuberculin of known strength into the dermis of several of the infected animals. When this dose of tuberculin, after 48 hours, causes a well-marked reaction, as indicated by redness, edema and necrosis, or by redness and edema, the animals may be considered as sufficiently sensitive. The test proper is made by dividing the remaining animals into lots of 3 to 4. The abdomen of each animal is carefully shaved, and all of the animals of each lot are then injected with the same amount of from 4 to 6 different samples of tuberculin. The injections are made intracutaneously in widely spaced areas along the outer edge of the abdomen, in order to prevent the marked edema which occurs when injections are made close to the midline. Each sample of tuberculin should be tested in amounts of 0.01 cc, 0.001 cc, and 0.0001 cc, made up to a volume of 0.1 cc with normal saline solution, the injections being made by means of a tuberculin syringe and a 26-gauge needle. Final readings are made forty-eight hours later. A tuberculin which, in a dose of 0.001 cc, will produce distinct edema and redness at the site of injection may be considered as a tuberculin of standard strength.

By the intracutaneous method the strength of a number of samples can be compared under the same conditions, and the result can be followed by the naked eye. On the other hand, determination of the toxic dose is complicated by variation in individual susceptibility of guinea pigs to tuberculosis and of tuberculous animals to tuberculin. Furthermore, intercurrent disease may be a determining factor in producing death. Nevertheless, there is a close paral-

lelism between the intracutaneous reaction and the toxicity of tuberculin. It is probable that the same active principle is involved, differences depending upon the amount used and the method of administration.

The following summary of his report is given by the author:

1. The strength of nine samples of commercial tuberculin and one sample of standard tuberculin was determined by means of the intracutaneous injection into tuberculous guinea pigs, and compared with their toxicity for tuberculous guinea pigs, with complement fixation, and with the precipitin reaction. These samples of tuberculin varied greatly in strength.
2. The measurements of relative strength of tuberculins by the intracutaneous method parallels closely the results obtained by determining the toxicity of the same samples.
3. The precipitin reaction and complement fixation have not measured the strength of tuberculins as accurately as the *in vivo* methods.
4. The intracutaneous method is widely used for diagnostic purposes, to determine the sensitivity to tuberculin, and the intracutaneous method of standardization furnishes a direct measure of capacity to produce the skin reaction.
5. Standard tuberculin, in a dose of 0.001 cc injected into the dermis of tuberculous guinea pigs, should produce distinct redness and edema.

PUBLICATIONS RECEIVED

Concerning Gye's Hypothesis of the Etiology of Malignant Tumors with Special Reference to the "Specific Factor." Malcolm J. Harkins, Jay Frank Schamberg, John A. Kolmer and Clara M. Kast. Reprint from *Journal of Cancer Research*, vol. x, No. 1, April, 1926. pp. 101.

Hog Lice and Hog Mange. Methods of Control and Eradication. Marion Imes. (U. S. Dept. of Agr. Farmers' Bul. 1085, Washington, D. C. pp. 22 Illustrated.)

Motion Pictures of the United States Department of Agriculture. (U. S. Dept. of Agr. Misc. Cir. 27, Washington, D. C., Aug. 16, 1924. pp. 32.) Also supplements issued March 1, 1925, and March 1, 1926.

The Cattle Grub or Ox Warbles, Their Biologies and Suggestions for Control. F. C. Bishopp, E. W. Laake, H. M. Brundrett and R. W. Wells. (U. S. Dept. of Agr. Dept. Bul. 1369, Washington, D. C., April, 1926. pp. 120. Illustrated.)

Foot and Mouth Disease—Control by Chemotherapy. Col. G. K. Walker and W. Taylor. (Dept. of Agr., Punjab, Vet. Bul. 17. Lahore, India, 1926. pp. 22.)

The Extension Animal Husbandman. U. S. Dept. of Agr., Washington, D. C., Serial No. 2, June 1926. pp. 33.

Practical Hog Houses. E. Z. Russell. (U. S. Dept. of Agr. Farmers' Bul. 1487, Washington, D. C., May, 1926. pp. 13. Illustrated.)

Veterinary Research Report, No. 2. H. R. Seddon et al. (Dept. of Agr. New South Wales, Science Bul. 26, April, 1926. pp. 48.)

Breeds of Dogs. S. R. Speelman. (U. S. Dept. of Agr. Farmers' Bul. 1491, Washington, D. C., May, 1926. pp. 45. Illustrated.)

National Veterinary Medical Association of Great Britain and Ireland. Annual Report and Balance Sheet. (Proc. Annual Congress, Dublin, 1926.) London, England. pp. 64.

Lice, Mange, and Ticks of Horses and Methods of Control and Eradication. Marion Imes. (U. S. Dept. of Agr. Farmers' Bul. 1493, Washington, D. C., June, 1926. pp. 22. Illustrated.)

The Rockefeller Foundation, A Review for 1925. George E. Vincent. New York, 1926. pp. 59.

ARMY VETERINARY SERVICE

CHANGES RELATIVE TO VETERINARY OFFICERS

Regular Army

Captain Harry J. Juzek, V. C., is relieved from duty at Fort Des Moines, Iowa,and directed to report to the Commandant, The Army Veterinary School, Washington, D. C., not later than August 23, 1926, to pursue a course of instruction.

Captain Charles B. Dunphy, V. C., is relieved from duty at Fort Benning, Ga., effective in time to sail from New York City, December 2, 1926, for duty in the Panama Canal Department.

Captain Louis L. Shook, V. C., Attending Veterinarian, Washington, D. C. will report to the Commanding General, District of Washington, for duty as district veterinarian in addition to his other duties.

Lt. Colonel Burt English, V. C., is relieved from duty at Fort Jay, N. Y. and directed to sail October 6, 1926, for the Philippine Islands and report to the Commanding General, Philippine Department, for assignment to duty with the Veterinary Corps.

Lt. Colonel Walter R. Pick, V. C., is relieved from duty in the Philippine Islands, upon completion of his present tour of foreign service, and is directed to report upon arrival at New York City for assignment to duty as station veterinarian, Fort Jay, N. Y., and as attending veterinarian, Forts Slocum and Wood, N. Y., the harbor defenses of eastern and southern New York and Sandy Hook, and to the Commanding General, 2nd Corps Area, for duty at his headquarters, in addition to his other duties.

Reserve Corps

New Acceptances

Captains:

Hardenbergh, John G.	Mayo Clinic, Rochester, Minn.
Wise, Howard Rhoads	Birdsboro, Pa.

First Lieutenants:

Howle, Thomas B.	117 Main Street, Oxford, Ala.

Second Lieutenants:

Anson, Charles W.,	Port William, Ohio.
Bacon, John	666 Jamaica Avenue, Brooklyn, N. Y.
Collins, Donald K.	457 Liverty Street, Rockland, Mass.
Crawford, John E.	708 Broadway, Far Rockaway, N. Y.
Davidson, Arthur C.	178 Hailesboro St., Gouverneur, N. Y.
Dennis, Wm. A.,	455 Ellicott St., Buffalo, N. Y.
Feldman, Gordon G.,	220 Federal Bldg., Spokane, Wash.
Goodman, L. W.	Holland, Patent, N. Y.
Greer, Charles S.	Pitcairn, Pa.
Groth, Harold H.	10531 Bryant Ave., Cleveland, Ohio.
Harshfield, G. S.	R.F.D. No. 2, East Liberty, Ohio.
Haverfield, Alfred O.	Cadiz, Ohio.
Heim, Thomas B.	81 East College St., Alliance, Ohio.
Kennelly, Edward M.	109 S. Quarry St., Ithaca, N. Y.
McCausland, Earl J.	Elmore, Minn.
McMurray, Thomas H.	Vina, Ala.
Moad, Joe L.	Whiting, Minn.
Olafson, Peter	224 Linden Ave., Ithaca, N. Y.
Reed, Francis I.	New Berlin, N. Y.
Rogers, F. L.	Jamison Avenue, Cadiz, Ohio.
Seaman, Harrison J.	R.F.D. No. 5, Fayette, Ohio.
Thorp, Frank, Jr.	Panora, Iowa.
Wilder, H. F.	Akron, N. Y.
Zingg, H. F.	Panora, Iowa.

Promotions:

Smith, Lester R., Lt. Col., 5541 Virginia Avenue, Kansas City, Mo.
Sipos, Andrew J., 1st Lieut., 121 No. Adams St., Petersburg, Va.

Separations:

Gingery, Howard L.	2nd Lt.	Iowa	Failed to accept reappointment.
Osborne, H. D.	2nd Lt.	Minn.	Failed to accept reappointment.
Shapera, S.	2nd Lt.	N. Y.	Failed to accept reappointment.
Thoreson, M.	2nd Lt.	N. D.	Failed to accept reappointment.
McKenzie, Peter	2nd Lt.	N. D.	Failed to accept reappointment.
Assmann, E. A.	2nd Lt.	Ohio	Failed to accept reappointment.
Crago, J. V.	2nd Lt.	Ohio	Failed to accept reappointment.
Fuchs, Hugh A.	2nd Lt.	Ohio	Failed to accept reappointment.
Mathis, Rudy C.	1st Lt.	N. D.	Declined reappointment.

A TRIBUTE TO DR. HALL

Our collection of literary gems has received another increment in the form of two letters, the first of which was addressed to the Mayo Institute, Washington, D. C. It was forwarded to Rochester, Minn., and found its way to the desk of Dr. J. G. Hardenbergh. Here it is:

March 17-3-26

Dear Sir.

I must write a few Lines. to Let you Know that I have tried the. Dr. M. C. Hall's Products they are very fine. and I must ask you. one thing a Bought one of my Dogs. Dos not gain at all. if you Please and Let me Know. wat to Do for him I am Practicing on them ofer 2 yers. the rest of em I have in good condition. just one of em.
one more thing hear is a talk abought License. If a Practiser hast to Pay taxes for the Dog's. Please Let me Know I haf to Pay I havent found any wormss in the Dogs. the rest of them are O. K. just one So this is all.

yourst truly
O. F. Sch...., R. R. Box, Pinconning, Mich.

The writer inclosed a stamped and addressed envelope for a reply, so Dr. Hardenbergh obligingly wrote and stated he was unable to determine just what information was wanted, hoping that his letter would terminate the correspondence. No such luck. The dogs were not doing so well, and besides—well, here is the letter:

March 31-3-26

Dear Sir.

I have Received your Letter. the 31 of March. I wish you would. Explain me wat to Do for. em Please Let me Know. if fits ar to be cured the Dogs have the fits very often. and I have worked hard to check the fit. with good medicines. 2 are very good. and 2 are in the fits. so Please. Let me Know wat to Do for em.
my Infirmation was to find out if a Practicer hafto pay Dog's taxes here is a talk aBought Dogs taxes Please Let me Know ifihafto Pay.

So this is all.

yours truly,
O. F. Sch...., Pinconning, Michgian.

Please Let me Know wat a Vittinarian course cost I wish to go tru a course home Studie only

MISCELLANEOUS

A CITY EDITOR'S EDITORIAL ON A COW

The cow is a female quadruped with an alto voice and a countenance in which there is no guile. She collaborates with the pump in the production of a liquid called milk, provides the filler for hash, and at last is skinned by those she has benefited, as mortals commonly are.

The young cow is called a calf, and is used in the manufacture of chicken salad.

The cow's tail is mounted aft and has a universal joint. It is used to disturb marauding flies, and the tassel on the end has unique educational value. Persons who milk cows and come often in contact with the tassel have vocabularies of peculiar and impressive force.

The cow has two stomachs. The one on the ground floor is used as a warehouse and has no other function. When this one is filled the cow retires to a quiet place where her ill manners will occasion no comment and devotes herself to belching. The raw material thus conveyed for the second time into the interior of her face is pulverized and delivered to the auxiliary stomach, where it is converted into cow.

The cow has no upper plate. All of her teeth are parked in the lower part of her face. This arrangement was perfected by an efficiency expert to keep her from gumming things up. As a result she bites up and gums down.

The male cow is called a bull, and is lassoed along the Colorado, fought south of the Rio Grande and shot in the vicinity of the Potomac.

A slice of cow is worth 8 cents in the cow, 14 cents in the hands of packers and $2.40 in a restaurant that specializes in atmosphere.—*Baltimore Sun.*

INTERSTATE MOVEMENT OF DAIRY CATTLE INCREASES

A study of the interstate movement of cattle made by the Bureau of Animal Industry, U. S. Department of Agriculture, for the period July 1, 1925, to May 1, 1926, shows a large increase in the number of dairy cattle entering this movement, compared with the corresponding period a year ago. The records

show an increase of approximately 28 per cent and indicate also that the principal origin of these cattle is in seven states. The information is particularly important in connection with federal regulations to prevent the spread of tuberculosis in live stock. Cattle moved interstate must have been previously tested for tuberculosis, or the test is applied by federal inspectors or other authorized veterinarians, and a suitable certificate accompanies cattle which pass the test.

The seven states which have contributed the largest number of cattle to the interstate movement are Wisconsin, Minnesota, Tennessee, Illinois, Texas, New York and Mississippi. The numbers of dairy cattle shipped interstate during the 10-months period ended May 1, 1926, ranged from about 55,000 from Wisconsin to approximately 16,000 from Mississippi. The animals are believed to be used largely for the establishment and enlargement of herds and also for replacing cows condemned because of tuberculosis.

The general health condition of the animals, as shown by the reports, is considered satisfactory. During the 10-months period, 342,615 dairy and other cattle were tested for interstate movement, with only 0.9 per cent being classified as reactors. This means that 99 cattle in every 100 were free from tuberculosis; the reactors were denied permits to move interstate.

BOVINE TUBERCULOSIS DECREASING

Cooperative tuberculin-testing, by federal, state and county forces, has reduced the percentage of tuberculous cattle in the United States from 4 per cent, in 1922, to 2.8 per cent, in 1926, according to a survey completed May 1, by the U. S. Department of Agriculture. Information was also gathered which indicates that by 1936 approximately 31 per cent of the entire country will have reduced the percentage of infection to less than one-half of one per cent and will thus be classed as "modified accredited" area.

But of more interest, perhaps, are the figures showing that most of the infection is confined to a comparatively small area. While the percentage of diseased cattle varies from less than one-half of one per cent, in some counties, to more than 23 per cent, in others, practically 73 per cent of the estimated reactors yet to be condemned are contained in 411 counties. The other 27 per cent of the estimated diseased cattle are scattered through-

out the remaining 2658 counties, where the average infection is less than 3 per cent.

This gives a clear insight into the problem of total eradication of the disease. It is comparatively easy, with sufficient funds available, to free any county with less than 3 per cent infection. The problem, therefcre, in this less-infected section, is one of proper initial testing and sufficient quarantine measures to protect against reinfection from bad herds.

HOOSIER CHANGES

Dr. R. C. Julien, State Veterinarian of Indiana, tendered his resignation to the State Live Stock Sanitary Board, July 17, 1926. Dr. Frank H. Brown, of Fortville, was chosen to succeed Dr. Julien.

It is said that Dr. Julien's resignation came as a distinct surprise to the veterinary profession and live stock industry of the Hoosier State. He had served as State Veterinarian for five years and was regarded as unusually well equipped for the position. In commenting on Dr. Julien's resignation, the Indianapolis *News* said editorially:

> The resigantion of Dr. R. C. Julien, State Veterinarian, after five years of diligent public service, will be generally regretted by those who have followed his work in reorganizing his department. Through this department the State is brought directly into contact with more farmers, dairymen and live stock raisers than through any other. Its indirect benefits are felt by every person who buys milk. Under Dr. Julien's direction, Indiana has risen to first place in precautions against the spread of tuberculosis through infected cattle.
>
> Dr. Julien's statement that he accepted the appointment against his wishes, but under pressure of an appeal to use his talents for the benefit of the State, and his explanation that he has resigned because the department is well organized and he has an opportunity to improve his financial and professional condition elsewhere, affords a good basis for estimating the worth of his service. Indiana has always been best served by men whose personal qualities lifted them far above the level of a purely political appointment. Dr. Julien's services had earned for him a place in this small class of public servants.
>
> It is noteworthy that in selecting a successor the board turned to Dr. Julien's assistant, who has been well schooled in the policies of the Board and pledged to carry them out as long as the Board has a free hand in the matter. The choice is a credit to Dr. Julien's foresight and the good judgment of the Live Stock Sanitary Board, which has so far stood between the welfare of the department and the advances of political spoilsmen, and in view of the way the change was made it seems probable that it will be able to hold out.

Dr. Frank H. Brown, selected to succeed Dr. Julien, comes to his new position well qualified. Born in Hamilton County, Indiana, December 11, 1887, he obtained his early education under difficulties. He was graduated from the Fortville (Ind.)

High School in 1907 and from the Indiana Veterinary College in 1910. For three years thereafter he was in general practice at Knightstown, Ind. In 1913 he entered the service of the U. S. Bureau of Animal Industry and was stationed at Kansas City, on meat inspection. The following year he was transferred to hog cholera control in Missouri, under Dr. B. W. Murphy. Later in 1914 he was transferred to Ohio, on the force of Dr. L. P. Beechy, at Lima. In October the same year Dr. Brown was put on foot-and-mouth disease eradication in Ohio and continued on this assignment during the early part of 1915. In April he was transferred back to hog cholera work, at Beatrice, Nebr., under Dr. S. E. Cosford. Two months later found him back in Indiana, on the force of Dr. Wickwire. He remained until

DR. FRANK H. BROWN

March, 1916, when he resigned to accept a position as field veterinarian with Pitman-Moore Company. He served in this capacity until February 6, 1925, when he resigned and accepted the position of Assistant State Veterinarian of Indiana, under Dr. Julien, succeeding the latter as State Veterinarian, July 17, 1926.

Dr. Julien has assumed his duties as representative of the Royal Serum Company and will remain in Indianapolis. Dr. C. C. Donelson (Ind. '12), who has been representing the Royal Serum Company in the state of Indiana for over six years, is now representing the same company in Iowa, with headquarters at Des Moines.

MEMORIAL TO DR. SCHMIDT

We are indebted to the *Jen-Sal Journal* for the use of the accompanying cut, showing the monument erected to the memory of Dr. J. J. Schmidt, 1845-1923, at Kolding, Denmark. The memorial was unveiled with appropriate ceremonies, June 19, 1926. The following inscription appears on one side of the monument:

WITH YOUR DISCOVERY YOU ELIMINATED THE MILK-FEVER SCOURGE AND MADE YOUR NAME AND TOWN WORLD FAMOUS.

Monument to Dr. Schmidt

On another side an inscription states that the memorial to Dr. Schmidt was erected by the veterinarians of the North. A third inscription gives the dates of his birth and death.

THE NAME OF THE SHEPHERD

The shepherd breed is called by various names; in America it is officially the shepherd; in Germany, the German shepherd; in England and France, the Alsatian; and among the public, almost always the police dog. Recently the Shepherd Dog Club of America decreed that the term police dog should not be used in advertisements of the shepherd, unless the dog had been trained in police work.

We do not like the term Alsatian; it is not true in its inference that the dog had its origin in Alsace and it is a name adopted during the World War in the heat of prejudice against all things German.

The term shepherd dog is not good, for it discredits the collie as a working dog with sheep and cattle; and in America, both by tradition and by present usage, the collie still holds the crown as the leading cattle and sheep dog. Shepherd dog is a wide term and is applicable to any breed that is used on cattle and sheep.

The term police dog is not altogether applicable, for other breeds are police dogs, among them Airedales and Dobermans. Yet in the popular mind a police dog means chiefly the shepherd dog, and perhaps ninety-five per cent of dogs police-trained are shepherds.

Thus the situation is thickened with confusion.

—*Dog World.*

ANTHRAX BACILLI IN HIDES AND ANIMAL HAIR

Dr. H. Migita, of the Laboratory of Animal Quarantine Station, Osaka, Japan, reports in the *Journal* of the Japanese Society of Veterinary Science, June, 1926, the number of instances anthrax bacilli were found in hides and hair imported from China for the years 1924 and 1925.

235 cattle hides examined and 19 were infected.
76 horse hides examined and 11 were infected.
158 samples of horse hair examined and 17 were infected.
378 samples of bristles and 26 samples of goat hair examined revealed no infection.

He says: "Since the year 1921 the importation of animal hairs to Japan, chiefly for the manufacture of brushes, became permissible after a course of disinfection at the custom-houses at Osaka, Yokohama and Tsuraga, but there is no ideal method for disinfection of imported hides as yet."

N. S. M.

SANITATION BOULEVARD

What a wonderful place Sanitation Boulevard must be. According to Dr. I. K. Atherton, B. A. I. inspector-in-charge of hog cholera control in Maryland, on Sanitation Boulevard one finds:

No errors
No detours
No slipping
No skidding
No accidents
No left turns
No blockades
No punctures
No speed cops
No monkey business
No traffic congestion
No garbage-feeding plants

Dr. Atherton says that "Sanitation Boulevard is a modest but safe highway," and that it "leads from failure to success."

HE REPLIED IN KIND

A farmer living near Boca Grande, Florida, was unfortunate enough to have a hog killed by a train on one of the Florida railroads. Seeking redress, the owner of the foolish hog addressed the following lyrical request to the railroad:

"My razor back strolled down your track,
One week ago today.
Your 89 came down the line
And smote his life away.

"I could not help this, you will see
He slipped through the cattle gate.
So kindly send a check for ten
His death to liquidate."

The complaint came to the attention of one of the superintendents of the railroad and being similarly inspired by the muse, he made the following metrical retort:

"Our 89 came down the line
And killed your swine, we know.
But razorbacks on railroad tracks
Quite often meet with woe.

"And so my friend, I cannot send
The check for which you pine.
Bury your dead, place o'er his head:
'Here lies a foolish swine.'"

BREEDS OF DOGS

The dog population of the United States is approximately 7,000,000, according to estimates, says the U. S. Department of Agriculture. The department, however, does not attempt to estimate the value of these dogs, consisting alike of animals with mixed or mongrel ancestry and canine aristocrats whose known parentage traces back through generations of pure-bred stock.

About sixty breeds of dogs are considered of enough consequence to be given a classification in the dog world. Only forty-six of this number, however, are of sufficient importance in this country to warrant inclusion in Farmers' Bulletin 1491-F, "Breeds of Dogs," just issued by the Bureau of Animal Industry.

A short discussion of each breed gives the reader concise information concerning the history, general characteristics, utility and distribution of the more important breeds. A list of breed associations, with the addresses of their secretaries, is also included. A copy of the bulletin may be obtained, as long as the supply lasts, by writing to the Department of Agriculture, Washington, D. C.

MUST HAVE BEEN SOME HOOTCH !

A Nebraska editor made up a batch of home brew or "hootch" and then endeavored to write up a sale bill and the following is what appeared in his paper the following week:

"Married at the home of the bride's township one mile north and two miles east of Mr. and Mrs. John Jones, highly respected residents of Thursday, January 27. Miss Esther Drinkwater by the Rev. 18 head of short horns consisting of four bridesmaids dressed in pale blue and carrying calves by their sides. They had tulle veils sired by the noted Kentucky jack, Bombina 3d. Also forty-six head of hogs including the groom's father from North Dakota, where he is engaged in missionary work, and is immuned by double process. These shoats are thrifty and all relatives of the bride and groom. They all gathered in the spacious dining room after the ceremony and partook of 300 bushels of seed sacks of millet and alfalfa. The bride is the youngest daughter of one Trusty incubator, capacity 600 eggs, one John Deere, five room cottage and a trip to Omaha after which they will draw 10 per cent interest from date. Free lunch at noon."

Journal A. M. A.

NEW BULLETIN ON HOG-HOUSES

Proper housing is an important factor in the successful raising of hogs. Too often this is neglected, when little expense and effort would be required to provide good, serviceable, well-ventilated houses, which give ample protection from cold and admit much-needed sunshine. The same kind of housing for hogs does not apply to all parts of the country, however, says E. Z. Russell, in charge of swine investigations, U. S. Department of Agriculture. In Farmers' Bulletin 1487-F, recently issued, he described a number of practical hog-houses for several sections of the country. One of the chief criticisms which may be made of the average hog-house, he says, is that it is poorly lighted and ventilated, if in fact any provision at all has been made for ventilation. The bulletin contains illustrations and floor-plans showing how proper ventilation and lighting is secured in the different styles of houses. A copy of the publication may be secured as long as the supply lasts by writing to the United States Department of Agriculture, Washington, D. C.

CAUSE OF SKIN DISEASE DISCOVERED

The cause of a certain kind of skin infection, known to physicians as "creeping eruption" is due to a tiny threadworm, scientists have just found. *Agamonemtodum migrans* is the name bestowed on the parasite by its discoverers, Dr. J. L. Kirby-Smith, W. E. Dove and C. F. White. In a report to the *Archives of Dermatology and Syphilology* they say that this species of cutaneous worm is fairly common in the southeastern and southern coastal states. Susceptibility to the infection varies, children being the most frequent victims. Whites are infected more readily than Negroes, it was found. The evidence at hand points to rats as the hosts of the adult form of the worm, though any one of the smaller domestic animals may be incriminated as the guilty harborer of the pest. Several modes of treatment have been proposed, but successful prevention of the infection will probably not take place until there is more knowledge of the life history of the adult parasite.

—*Science.*

The first vaccination ordinance in the state of Illinois was adopted by the city of Urbana, effective May 14.

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AUGUST 20, 1926

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*C. J. Sigmond, Box 80, Pipestone.
*R. R. Donaldson, Argyle.

‡No recent information obtainable.

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(No veterinary practice act.)

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Ruben Blackner, Lyman—Vice-President.
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LOST

Below is given a list of members of our Association, for whom we have no correct addresses. First-class mail, sent to these members at the addresses given after their names, has been returned by the post office, undelivered. The Secretary will be very glad if any member can furnish correct addresses for any of these men.

Bay, L. E., Caspar, Wyo.
Bennett, J. E., c/o Gordon, Ironsides & Faus, Winnipeg, Man.
Dodd, W. E., 203 No. 2nd Ave., Marshalltown, Iowa.
Gillespie, Andrew, Marlow, Okla.
Goodwin, P. W., Wrights, Calif.
Gross, Wm. F., Cristobal, Canal Zone.
Kernohan, Edw., 1226 No. Market St., Wichita, Kans.
Lynch, J. H., Fonda, Iowa.
McCall, W. R., General Delivery, Anchorage, Alaska.
McCoy, B. F. C., 521½ Washington St., Columbus, Ohio.
Nelson, M. D., 201 Illinois Ave., St. Joseph, Mo.
Nielson, N. E., University of Nevada, Reno, Nev.
Owen, F. D., 931 Baker St., Los Angeles, Calif.
Randall, G. H., Bethel, Kans.
Riddell, Robt., 460 Chester St., Victoria, B. C.
Severovic, M. F., 1702 So. Loomis St., Chicago, Ill.
Spain, R. J., Box 844, Capitol Station, Helena, Mont.
Todd, Geo. W., Platte Center, Nebr.
Wallen, C. J., 1142 Melrose St., Glendale, Calif.

The thirteen recognized veterinary colleges in the United States and Canada this year graduated approximately 130 veterinarians, the smallest nunber, in any one year, as far back as available records go. The graduating class of 1891, at the Ontario Veterinary College, numbered 136.

ASSOCIATION MEETINGS

STATE VETERINARY MEDICAL ASSOCIATION OF TEXAS

Steady advancement in the veterinary profession was the keynote of several addresses made before members of the State Veterinary Medical Association of Texas, at the sixteenth annual convention, held at the A. & M. College of Texas, June 14-15-16-17-18-19, 1926. Dr. W. R. Sanderson, of Brownwood, president, was chairman of the meeting. The new officers elected for the ensuing year were as follow: President, Dr. U. E. Marney, San Antonio; 1st vice-president, Dr. E. F. Lanham, Amarillo;; 2nd vice-president, Dr. E. C. Smotherman, Hillsboro; secretary-treasurer, Dr. D. Pearce, Leonard. Members voted to return to the A. & M. College for their 1927 meeting, and to hold their midwinter meeting in San Antonio. Dr. Sanderson was named delegate to the A. V. M. A. convention to be held in August, at Lexington, Ky.

Dr. T. O. Walton, president of the A. & M. College, in his address of welcome, praised the veterinarians for their dispatch and efficiency in combating the foot-and-mouth disease, and said he knew of no more constructive thing than the live stock work being done by them. Dr. Walton declared that the veterinarians were demonstrating the tremendous value of their work daily, to the people of Texas. Response was made by Dr. H. L. Darby, of Fort Worth.

Dr. N. F. Williams, state veterinarian, contrasted the development of the longhorn into the pure-bred cattle of today. He declared that veterinarians of the State owe their undivided support to the A. & M. College. Turning to a discussion of the work of the veterinarians, Dr. Williams said a close relation existed between the profession and public health work. "Veterinarians are responsible for the control of rabies," Dr. Williams charged and added, "The State would save money annually, if all the dogs were vaccinated as a precaution against rabies, instead of giving the Pasteur treatment."

Dr. Williams also introduced a resolution, which was adopted, to make a uniform charge of fifty cents for testing baby beefs for the boys' and girls' clubs, and the money to be sent to the secretary-treasurer of the Association. He, in turn, is to send the

money to the secretary-treasurer of the Fort Worth Fat Stock Show, to be used as premiums for the baby-beef classes.

Dr. H. Schmidt, of the College, interpreted for Dr. L. Santa Maria, head of the National School of Veterinary Medicine of Mexico. Dr. Santa Maria said that the foot-and-mouth disease in his country was practically under control, and that it was hoped that it would be stamped out entirely this year. He also stated that Mexico is facing a big problem in the tuberculous animal, and in the diseases caused by poisonous weeds.

Dr. Santa Maria had come to this country to buy oil-burners, disinfectants and apparel for use in connection with the work of eradicating foot-and-mouth disease. He will make his purchases in Houston and, while there, will study the inspection of milk as carried on by Houston veterinarians, the methods to be introduced later in the southern republic.

Dr. N. F. Williams read a bulletin issued by Secretary of Agriculture Jardine, dated June 10, in which the government announced that foot-and-mouth disease had been completely eradicated from the United States.

Dr. Mark Francis, dean of the School of Veterinary Medicine, declared that of 800,000,000 animals in Texas, two per cent annually were being lost through preventable causes. He laid their loss to the following diseases: abortion, glanders, tuberculosis, anthrax, blackleg, foot-and-mouth disease and hog cholera. He stressed the value of milk and meat inspection to public health. Dr. Francis predicted a bright future for veterinary medicine at the A. & M. College.

Dr. L. B. Ernest, mayor of Kensington, Md., and a member of the U. S. B. A. I., lectured during the week, on tuberculin testing and tuberculosis eradication, and showed the motion picture "Clean Herds—and Hearts," which was one of the most impressive things given at the short course.

Dr. John A. Phillips, city veterinarian of Houston, explained the ordinance governing milk and meat inspection, and methods for their enforcement. Dr. S. G. Dunn, chief milk inspector, outlined his work and told of the campaign to rid the community of diseased cattle. He announced that everything possible would be done to enforce the milk ordinance in Houston.

Dr. J. G. Horning, of Houston, illustrated and lectured on the use of endoscopic instruments in removing objects from the lungs, stomach and other organs. He has taken pictures of the

college buildings, which he will show to European veterinarians this fall, when he tours the Continent.

Various plant and mineral poisons found in the State, and the increasing problem these present to live stock owners, was explained by Dr. S. N. Blackberg, associate professor of veterinary medicine. He displayed a bundle of letters from persons seeking information on poisonous plants which, they suspected, had killed cattle owned by them. Dr. Blackberg emphasized the need of much research work in this field, to develop precautionary measures. He cited an instance of four human deaths due to poisoning by drinking milk which had come from plant-poisoned animals.

Dr. E. D. King, Jr., of Valdosta, Ga., advocated disseminating information to the public, in an effort to get their cooperation in the municipal inspection of milk and meat. He recalled the Odom case, in which four members of a Columbus (Ga.) family contracted tuberculosis by drinking milk from diseased cows. He charged that 75 to 85 per cent of deaths due to infantile diarrhea in bottle-fed babies were contracted through feeding them the product of infected cattle. The Georgia veterinarian advocated the passing of an ordinance, requiring applicants for licenses to handle food products to have written approval of the chief inspector of the city before it is issued.

The principal diseases communicable to humans from infected cows were outlined, as typhoid fever, scarlet fever, diphtheria, septic sore throat and diarrhea, by Dr. W. H. Haskell, of Beaumont. He said that the veterinary profession has a definite place in public health matters, for it is best fitted for the work. Dr. Haskell stressed the need for people to adopt the standard of health as outlined by the government and that they aid in enforcing the regulations.

Public health work, as it is being carried on in Houston, was related in an address by Dr. John Phillips and Dr. R. S. Dunn. Education of the public is a great problem in the work, it was claimed. Dr. Phillips outlined the methods used in meat inspection work. Dr. Dunn announced that the greatest difficulty in milk inspection was encountered with owners of small dairies, who failed to obey city regulations.

On Tuesday evening a beautifully appointed banquet was served to about fifty veterinarians and their wives. A week of delightful gaiety, with many instructive features, was enjoyed by the Ladies' Auxiliary. The Auxiliary elected the following

officers for the ensuing term: Mrs. L. E. Warner, Waco, president; Mrs. Mark Francis, College Station, 1st vice-president; Mrs. Verne A. Scott, Stephenville, 2nd vice-president; Mrs. H. V. Cardona, Fort Worth, secretary-treasurer; Mrs. P. P. Starr, Gainesville, recording secretary; Mrs. D. Pearce, Leonard, reporter.

D. PEARCE, *Secretary.*

SOUTH CAROLINA ASSOCIATION OF VETERINARIANS

The annual meeting of the South Carolina Association of Veterinarians was held at Orangeburg, July 13-14, 1926. A large number of members and visitors were in attendance to enjoy the interesting program and the hospitality of Orangeburg. Among the out-of-state veterinarians who contributed to the program were Dr. C. A. Cary, of Auburn, Ala., and Dr. F. R. Butz, of Cincinnati, Ohio, chief veterinarian of the Southern Railway Company. Two outstanding features of the meeting were the banquet and the fish-fry, in which a number of the ladies participated.

M. R. BLACKSTOCK, *Secretary.*

NEVADA STATE VETERINARY ASSOCIATION

The 1926 semi-annual meeting of the Nevada State Veterinary Association was called to order by President Glace, in the Agricultural Building, University of Nevada, Reno, at 2 p. m., July 14, 1926.

Roll-call showed ten members and three visitors present.

A contribution of $20.00 to the Schmidt Memorial Fund, being raised by the A. V. M. A., was made from the funds of the Association.

Dr. Geo. E. Bamberger, of Reno, was designated as a delegate to represent the Association at the conference of State Association representatives, to be held at Lexington, Kentucky, August 16.

Dr. G. T. Woodward, of Fallon, Nevada, was elected to membership in the Association.

The following papers were presented and discussed:

"The Treatment of Sterility in Horses and Cattle," by Dr. Geo. E. Bamberger.

"Practical Sheep Husbandry," by Dr. Robert Dill.

"Immunization Against Rabies," by Dr. F. H. Baker.

"Tuberculosis Eradication," by Dr. L. C. Butterfield.

"Dynamite or Glonoin Poisoning," by Dr. W. C. Dye.

A round-table dinner was enjoyed by the members and guests at the Hotel Golden.

EDWARD RECORDS, *Secretary.*

MARYLAND STATE VETERINAY MEDICAL ASSOCIATION

The semi-annual meeting of the Maryland State Veterinary Medical Association was held at Hagerstown, July 15-16, 1926, with about sixty in attendance.

The first session was called to order by the president, Dr. J. W. Hughes, of Ammendale. The first speaker was Mr. F. L. Bennett, who extended a most hearty welcome to the Association. The President made a very fitting response to this address, after which he gave a short talk on the present status of the profession. He called attention to the fact that, with the passing of the horse, the public seems to have assumed that the need for the veterinarian is also passing. This opinion is reflected in the small number of young men entering the veterinary colleges of the country. In fact, at the present time, the number of men graduating from these colleges is not sufficient to care for replacements occasioned by retirement, death, etc. The situation is becoming still more serious as the federal and state governments are employing increasing numbers of veterinarians each year. This supply seems to be coming, at present, to some extent, from the practitioners, and is thus dangerously depleting their ranks. We should use every effort to interest intelligent young men in the profession.

Dr. R. V. Smith, of Frederick, next gave a very complete report of the address of Dr. Franz Benesch, head of the Department of Obstetrics, at the Veterinary School in Vienna, delivered at the University of Pennsylvania, in Philadelphia, on May 10, 1926. The outstanding feature of this paper was the recommendation of the use of local anesthesia for the genital tract, especially in abortion and sterility work. This treatment should also be of great value in cases of eversion of the uterus, excessive uterine contractions, etc.

The fourth feature of the program was a very interesting talk on "Milk and Milk Inspection," by Dr. Hulbert Young, of the Walker-Gordon Laboratories, Baltimore. Dr. Young briefly

reviewed the anatomy and physiology of the udder, going into some detail on the secretion of milk. The four important factors in milk inspection, which Dr. Young stressed, were: the health and cleanliness of the animals, the health and cleanliness of the milkers and attendants, the care of the utensils, and the cooling of the milk.

The last paper of the morning session was entitled "Anesthesia for Large Animals," and was given by Dr. J. N. Frost, Professor of Surgery, New York State Veterinary College, Cornell University, Ithaca, N. Y. This paper was written entirely for the practitioner, and was filled with useful suggestions. Some of the points brought out were to grease the horse's nose immediately after, and not before, chloroform anesthesia. In administering the anesthetic, watch the animal's breathing. In cases where respiratory stimulants are indicated, cocain in the jugular vein will often be found to be of value. Do not let chloroform collect in the sinuses. Place a sack of hay under the horse's shoulder, or employ some other means of draining the trachea of chloroform after finishing with the anesthetic. The usual local anesthetics were discussed and their indications and contra-indications were enumerated. It was advised to employ local anesthetics wherever possible.

The afternoon session was taken up with the clinics. Dr. R. V. Smith very successfully demonstrated the Benesch method of local anesthesia on a cow. The other demonstrations included the removal of about ten inches of a telescoped rectum from a dog, and hernia operations on dogs and hogs.

A most enjoyable banquet was held in the evening at the Masonic Hall. There were about forty people present. Dr. I. K. Atherton outdid himself as toastmaster. The other speakers did their parts equally well.

At 9:30 on the second morning, Dr. DeVoe Meade, Professor of Dairy and Animal Husbandry, University of Maryland, delivered a paper on "The Improvement of the Dairy Herd through Breeding." This paper was most interesting and instructive. Data were presented showing the amount of butter-fat a cow must yield to make a profit for the owner. Information in regard to the increased profits which may be expected by proper breeding was also given.

The second paper of the morning was delivered by Dr. M. Dorset, Chief of the Biochemic Division, U. S. Bureau of Animal Industry, Washington, D. C. The title of this paper was "In-

vestigations on Tuberculin." The author briefly reviewed the development of tuberculin, and called attention to some of the problems which his and some other laboratories are trying to solve. We were given the latest information on the progress of the standardization work being conducted by the public health group of the League of Nations. We were also given some most interesting data on the new tuberculin with which Dr. Dorset is working.

The title of the final paper was "The Army Veterinary School and Its Activities." This paper was delivered by Lt. Col. William P. Hill, Army Medical School, Walter Reed Reservation, Washington, D. C. Colonel Hill gave a rather complete history of the development of veterinary medicine in the Army, which has finally culminated in the present rank of the army veterinarian and the establishment of Army Veterinary schools, at Walter Reed Reservation and at Carlisle. He also outlined the curricula at these schools. The equipment provided and the instruction given are of the highest type, as shown by the fact that it is costing the government about five thousand dollars for each veterinary officer's training. The Surgeon General has been most agreeably surprised by the showing which the Veterinary Corps has made, and promises his whole-hearted support for the future.

A short business meeting was next held. At this time the Association approved the new Veterinary Practice Bill, subject to any changes which may be agreed upon after conference between the Legislative and Executive committees.

The afternoon was devoted to clinics. The major operations were the castration of a cryptorchid, by Dr. J. N. Frost, and the removal of a foreign body from the pericardium of a cow, by Dr. Springer. The meeting adjourned at about 5:30 p. m.

E. M. PICKENS, *Secretary.*

FLORIDA STATE VETERINARY MEDICAL ASSOCIATION

The midsummer meeting of the Florida State Veterinary Medical Association was held in the El Comodoro Hotel, Miami, July 26-27, 1926. This meeting proved to be the most interesting of any meeting ever held in the history of the Association.

The meeting was called to order by the President, Dr. T. J. Mahaffy, of Jacksonville. The address of welcome was made by Mr. Lon Worth Crow, President of Miami Chamber of Commerce.

The response to the address of welcome was very ably given by Dr. J. V. Knapp, State Veterinarian, Tallahassee.

President T. J. Mahaffy, in his opening remarks, discussed the importance of our Association, the progress we have made, and called attention to several desirable policies which could be carried out by members of the Association.

Dr. A. W. Ziebold, Director of Public Welfare of Miami, discussed some of the problems connected with city food inspection work. Dr. Ziebold's remarks were very interesting and instructive and brought forth much discussion.

Dr. A. T. Knowles, of Miami, gave a paper on "Mastitis." This paper proved very instructive and many important points were considered in connection with mastitis.

In the afternoon a clinic was held in the hospital of Dr. A. T. Knowles. Several interesting cases were presented at this clinic. Dr. Major Scofield demonstrated one method of performing the hysterotomy operation.

Tuesday morning, July 27, the program was opened with a very instructive discussion on small animal practice by Dr. H. M. Clarvoe, of Tampa. In his discussion, Dr. Clarvoe gave consideration to some important diseases of small animals, with special consideration to distemper. Next on the program was a paper on "Hysterotomy in Small Animals," by Dr. J. G. Catlett, of Miami. In his paper Dr. Catlett described very clearly the technic of the operation.

A question-box discussion closed the program. This was conducted by Dr. F. C. Wilson, of Deland. In the afternoon a motorcade was made to the dairy of Dr. J. G. Dupuis, near Miami. Dr. DuPuis' dairy is one of the largest and best kept dairies in the South and the trip was very enjoyable.

On Monday night the Miami Chamber of Commerce entertained the veterinarians and their wives at a banquet. A good time was enjoyed by all. Dr. A. W. Ziebold proved to be a real master in the service as toastmaster.

The midwinter meeting of the Association will be held in Gainesville, in February.

A. L. Shealy, *Secretary.*

WEST VIRGINIA VETERINARY MEDICAL ASSOCIATION

The annual meeting of the West Virginia Veterinary Medical Association was held at the Shenandoah Hotel, Martinsburg,

July 29, 1926. The election of officers resulted as follows: President, Dr. S. M. Langford, Martinsburg; secretary-treasurer, Dr. S. E. Hershey, Charleston.

S. E. HERSHEY, *Secretary.*

MISSOURI VALLEY VETERINARY ASSOCIATION

The thirty-third annual meeting of the Missouri Valley Veterinary Association, held in Kansas City, Mo., July 27-28-29, 1926, was very encouraging and was considered a very fine meeting, although the attendance was not what it should have been with such an excellent program. The two hundred veterinarians and their wives who attended enjoyed the meeting and showed their appreciation of the splendid program and entertainment. This meeting started the Association again, after the long legal trouble, which had been pending in Kansas City, had been ended definitely and for all time, as reported by the Defense Committee, after an expense to the Association of approximately $1500. The Association is now incorporated and every indication points toward it again taking its place among the large veterinary organizations of the country. A spirit of harmony and good fellowship prevailed and eleven new members were admitted. There are now 250 members in good standing, with 200 paid up to July 1, 1926.

In spite of past difficulties, the finances of the Association are in good shape. A registration fee of $2.00 was charged those in attendance who were not members, which, for the most part, was gladly given, and a boy at the meeting-room door requested that badges be worn or else the person was referred to the registration desk to secure either a member's or visitor's badge. Those registering were also asked their occupation. This system of registration was thought fair to the members who pay their dues, kept out undesirable people, and it afforded those not members an opportunity to contribute toward the expense of the meeting.

The first day, Dr. D. E. Trump, of Utica, Nebr., read a very practical paper on "Some Points on Hog Cholera Immunization and Worming Pigs with the Stomach-Tube." Dr. C. H. Case, of Akron, Ohio, discussed "Some Common Diseases of the Digestive Tract, Genital Organs, and Udder of the Cow," and told how he handled these problems in every-day practice in a very interesting and helpful manner. "Coccidiosis in Feeder Cattle"

was the subject which Dr. E. R. Frank, of Manhattan, Kans., presented and he gave his experience in handling this condition. (Dr. Frank's paper is published in this issue of the JOURNAL.) Mr. H. R. Smith, Live Stock Commissioner, of Chicago, discussed "Testing Poultry in Modified Accredited Counties," giving the plan of the work going on in Hillsdale County, Michigan. He predicted that veterinarians would soon be called upon to handle this problem in a very extensive way. "The Non-Reacting Tuberculous Cow and No-Visible-Lesion Reactors" was discussed and illustrated by Dr. L. Enos Day, of Chicago, in a very instructive way.

The morning of the second day was devoted to a discussion of poultry problems. Dr. F. A. Laird, state veterinarian of Illinois, read a paper on "The Handling of Bacillary White Diarrhea and Controlling Avian Tuberculosis," in which he described how this work is done by practitioners in Illinois under state supervision of accrediting flocks. (Dr. Laird's paper is published in this issue of the JOURNAL.)

"Experiments with the Pullorin or Wattle-Injection Method of Detecting White Diarrhea Infection of Fowls" was discussed by Dr. Sivert Ericksen, who stated that although the work was still in the experimental stage, it was his opinion that this test could be run as reliably as the blood-tests, by using a properly prepared product. Dr. J. R. Beach, of the University of California, discussed "The Present Status of Poultry Diseases and Their Treatment and Control" in a very comprehensive manner. From these papers and through a question-box a great deal of information on poultry practice was brought out, including many new ideas.

The afternoon of the second day was devoted to small-animal practice. Dr. J. G. Horning, of Houston, Texas, presented an illustrated lecture on "The Use of Special Diagnostic Instruments in Small Animal Practice," which was highly interesting and showed that the use of instruments such as the X-ray and fluoroscope are not confined to the practice of human medicine. Dr. Horning's work was highly technical, but it showed the possibilities of small-animal practice. Next, Dr. J. C. Flynn read a paper on "The Needs of the General Practitioner in Small Animal Practice," in which he pointed out how the general practitioner should equip himself if he is to secure the small-animal practice in communities which do not support a practcie

confined to small animals. (Dr. Flynn's paper is published in this issue of the JOURNAL.)

The clinic on the third day proved the feature of the meeting. Dr. A. T. Kinsley autopsied some pigs brought in for diagnosis. Dr. D. E. Trump and Dr. E. R. Steel showed their methods of passing the stomach-tube in the pig. Dr. Horning and Dr. Flynn exhibited several cases in small animals for diagnosis; demonstrated the use of special instruments such as the stomach-tube, the gastroscope and laryngoscope; showed the administration of drugs; methods of restraint, etc. Dr. Beach and Dr. Ericksen autopsied some chickens; showed postmortem technic; demonstrated methods of restraint and administration of drugs to chickens; illustrated culling; exhibited reactors to the tuberculin and pullorin tests, also demonstrating the technic; and showed method of microscopic examination for coccidiosis. They had for a postmortem an old bird showing chronic coccidiosis of the duodenum. Dr. Case and Dr. H. L. Stewart demonstrated lesions of diseased genital organs, which had been secured from the packing-plants. Dr. Case showed his method of irrigation of the uterus of the cow and also demonstrated operations on the udder of the cow.

The members of the Association who did not attend missed a splendid meeting, full of good practical information, and those who attended were fully repaid for their time and expense. The ladies reported that they had thoroughly enjoyed their program, which had been provided by the Kansas City Chamber of Commerce. The second evening of the meeting a banquet was held at the Meadow Lake Country Club, which was enjoyed by the large number who attended.

The election of officers resulted as follows: Dr. C. J. Norden, of Lincoln, Nebr., president; Dr. E. L. Dickey, of Louisburg, Kans., vice-president; Dr. E. R. Steel, of Grundy Center, Iowa, secretary. The old board of trustees was re-elected.

E. R. STEEL, *Secretary.*

MONTANA VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Montana Veterinary Medical Association was held in the Livestock Building, Helena, July 30-31, 1926.

The following papers were presented:

"Rabies," by Dr. W. J. Butler, State Veterinarian.
"Case of Rabies in a Cow," by Dr. O. L. Devore, Bozeman.

"Live Stock Poisoning," by Dr. Emil Starz, chemist, Livestock Sanitary Board.

"Poisonous Plants," by Dr. C. D. Marsh, in charge of poisonous plant investigations, U. S. Bureau of Animal Industry, Washington, D. C. (Illustrated).

"Diagnosis of Intestinal Parasites of Sheep by Examination of Feces," by Dr. Erwin Jungherr, Montana State College.

"Foot-and-Mouth Disease," by Dr. J. W. Murdoch, Inspector-in-charge, U. S. Bureau of Animal Industry, Helena.

"Progress in Tuberculosis Eradication," by Dr. A. E. Wight, Tuberculosis Eradication Division, U. S. Bureau of Animal Industry, Washington, D. C.

"The Extent and Nature of the Training in Veterinary Science Essential to the Successful Teaching of Vocational Agriculture," by Dr. K. G. McKay, Spokane, Wash.

In the report of the Committee on Diseases, made by Dr. Howard Welch, emphasis was laid on the fact that in the near future we must make provision for testing all our breeding flocks of chickens for *B. pullorum* infection.

The only clinical work attempted at this meeting was a demonstration of caponizing by Dr. F. M. Nelson, of Livingston, and Dr. J. W. Kilpatrick, of Hamilton.

At the business sessions considerable business of local interest was transacted. The discussions of the various papers were lively and very instructive. The new officers elected for the ensuing year were: Dr. F. M. Nelson, Livingston, president; Dr. C. A. Hatterscheid, Glendive, vice-president; Dr. Hadleigh Marsh, Helena, secretary-treasurer.

In connection with the Association meeting, a conference of the federal veterinarians, stationed in Montana, was held with the inspector-in-charge, and the district deputies of the State Livestock Sanitary Board met with the state veterinarians. The custom of calling in the state and federal veterinarians for conferences at the time of the annual meeting of the Association adds materially to the attendance at the meetings and also to the interest.

HADLEIGH MARSH, *Secretary.*

The Laboratory of Animal Pathology and Hygiene of the University of Illinois has found it necessary to raise the fee for rabies examinations from one dollar to five dollars.

The *Veterinary Record* (London) announces that Mr. Walter Guinness, Minister of Agriculture and Fisheries, has appointed Mr. J. R. Jackson, M. R. C. V. S., Deputy Chief Veterinary Officer of the Department, to be Chief Veterinary Officer, succeeding the late Sir Stewart Stockman.

NECROLOGY

OTTAWAY C. NEWGENT

Dr. Ottaway C. Newgent, of Indianapolis, Ind., died suddenly at his home in that city, July 17, 1926. His death came unexpectedly, although he had not enjoyed good health for some time.

Born September 26, 1875, in Putnam County, Indiana, Dr. Newgent received his early education in the public schools and Danville Normal College. After taking preliminary work in human medicine, he received his veterinary training at the Indiana Veterinary College, having been graduated in 1909. He also pursued postgraduate work. He practiced at Russellville and Bellmore, Ind., for short periods. Later Dr. Newgent accepted the chair of anatomy in the Terre Haute Veterinary College. He left that position in 1918 to accept a similar one in the Indiana Veterinary College, where he earned a splendid reputation as a teacher of anatomy. Dr. Newgent was acting dean of the Indiana Veterinary College at the time it closed, two years ago.

Dr. Newgent joined the A. V. M. A. in 1911. He was a member of the Indiana Veterinary Medical Association and the Fraternal Order of Eagles No. 211. He is survived by his widow, his father and one brother.

RAYMOND G. OWENS

Dr. Raymond G. Owens, of Milwaukee, Wis., died May 24, 1926, in his thirty-fifth year. He was born in Milwaukee, educated in the public schools there, attended the University of Wisconsin, and received his veterinary education at the Chicago Veterinary College. He was graduated in 1914. After a year as an assistant to Dr. E. L. Quitman, of Chicago, Dr. Owens returned to his native city and established a practice there. During the late war he served as first lieutenant in the Veterinary Corps. He is survived by his widow, three daughters, his parents, one brother and one sister.

FRANK HOLDEN SMITH

Dr. Frank H. Smith, a graduate of the University of Pennsylvania, class of 1908, died of pneumonia and Bright's disease, at Darlington, Mass., July 13, 1925.

S. L. BRATTON

Dr. S. L. Bratton, of Walton, Ind., died July 28, 1926, following an operation for goiter, from which he had been a sufferer for some time. The operation became necessary when an abscess developed on his neck.

Born near Crawfordsville, Ind., November 17, 1889, Dr. Bratton attended public and high schools, and received his veterinary training at the McKillip Veterinary College. He was graduated in 1912, entered practice and later served in the World War.

Dr. Bratton joined the A. V. M. A. in 1919. He was a member of the Indiana Veterinary Medical Association, an Odd Fellow and a Mason. He is survived by his widow, one daughter, his parents and two brothers.

F. L. DULAUNE

Dr. F. L. Dulaune, of Napoleonville, La., is reported to have died during January, 1926. He was a graduate of the St. Joseph Veterinary College, class of 1920. About a year ago he had a nervous breakdown and it is reported that his death occurred while he was a patient in the hospital, at Jackson, La.

ROBERT C. TALTY

Dr. Robert C. Talty, of Washington, D. C., died of pneumonia, June 8, 1926. Born July 8, 1875, at Washington, D. C., Dr. Talty attended the United States College of Veterinary Surgeons and was graduated with the class of 1907. He served in the Veterinary Corps during the late war and reached the rank of captain. Dr. Talty joined the A. V. M. A. in 1918, while at Camp Greenleaf.

ELWIN T. DAVISON

Dr. Elwin T. Davison, of Athenia, N. J., was instantly killed in an automobile accident, near Unadilla, N. Y., August 21, 1926. The automobile in which Dr. Davison was driving, with his wife, son and daughter-in-law, was hit by a milk train, at a grade crossing. Mrs. Davison and her son, Elwin, were also instantly killed, and her daughter-in-law so severely injured that she was not expected to live at latest reports.

For the past eighteen years Dr. Davison had been in charge of the quarantine station of the U. S. Bureau of Animal Industry, at Athenia, N. J., where all animals entering the port of New York are held for examination and quarantine.

Dr. Davison was a graduate of Iowa State College, class of 1895. He joined the A. V. M. A. in 1913. He was 53 years of age.

E. T. HARRINGTON

Dr. E. T. Harrington, of South Boston, Mass., died April 13, 1926. Death was due to heart disease. Born July 2, 1869, he received his veterinary education at Harvard University and was graduated with the class of 1890.

Dr. Harrington joined the A. V. M. A. in 1902 and served as Resident Secretary for Massachusetts (1920-1921). He was a member of the Massachesetts Veterinary Association, and of the Ancient Honorable Artillery, Boston Lodge of Elks, South Boston Council Knights of Columbus, and was vice-president of the South Boston Citizens' Association, as well as a director of the Boy Scouts of America. He is survived by his widow and one son.

MARRIAGES

Dr. W. R. Hinshaw (Mich. '23), of Manhattan, Kans., to Miss Edna Bangs, of Madison, Kans.. June 19, 1926.

Dr. D. A. Sanders (K. S. A. C. '23), of Gainesville, Fla., to Miss Grace Schwandt, of Manhattan, Kans., June 21, 1926, at Jacksonville, Fla.

Dr. Joseph H. Coffman (K. S. A. C. '11) to Mrs. Viola Morris Cox, at Atlanta, Ga., July 10, 1926.

Dr. H. M. DeVolt (Corn. '23) to Miss Florence Hesperia Lyon, both of Ithaca, N. Y., July 21, 1926.

Dr. F. J. Crow (K. C. V. C. '18), of Iowa City, Iowa, to Miss Cornelia Thompson, of Ellsworth, Iowa, August 5, 1926.

Dr. R. W. Wilder (Iowa '20), of Webster City, Iowa, to Miss Wina Johnson, of Iowa City, Iowa, August 5, 1926.

BIRTHS

To Lt. and Mrs. E. W. Young, of Fort Huachuca, Ariz., a son, William Wood, May 11, 1926.

To Dr. and Mrs. W. M. McLeod, of Manhattan, Kans., a daughter, May 21, 1926.

To Dr. and Mrs. C. H. Kitselman, of Manhattan, Kans., a daughter, June 17, 1926.

To Dr. and Mrs. S. S. Gibson, of Randolph, Nebr., a son, Robert Calvin, June 21, 1926.

To Dr. and Mrs. E. D. Sadler, of Wagner, S. D., a son, July 15, 1926.

To Dr. and Mrs. Ray Van Orman, of Ithaca, N. Y., a daughter, July 16, 1926.

To Dr. and Mrs. Glenn V. Grewell, of Marshalltown, Iowa, a daughter, Genevieve Ione, July 16, 1926.

To Dr. and Mrs. M. A. Nevens, of Glens Falls, N. Y., a son, August 5, 1926.

To Dr. and Mrs. M. L. Cline, of Plainview, Nebr., a son, Donald, August 7, 1926.

PERSONALS

Dr. J. G. Berthelson (K. S. A. C. '26) is at La Jara, Colo.

Dr. R. A. Sawyer (Iowa '26) is located in Brookings, So. Dak.

Dr. Carman B. Towne (Iowa '26) is located at Ottumwa, Iowa.

Dr. Ira Dodson (Chi. '12) serves Danville, Ill., as City Veterinarian.

Dr. H. F. Roberts (Chi. '16) is San Diego County (Cal.) Veterinarian.

Dr. J. C. Hunt (Ont. '08) is operating a 5000-acre farm at London, Ohio.

Dr. J. Allyn Rogers (U. P. '26) gives Bryn Mawr, Pa., as his new location.

Dr. Murrell O. Robinson (U. P. '25) gives Waynesboro, Pa., as his new location.

Dr. L. C. Daugherty (Ind. '04), of Kissimmee, Fla., was a recent visitor in Van Buren, Ind.

Dr. H. N. Strader (Iowa '20), formerly of DeWitt, Iowa, is now stationed at Cedar Rapids.

Dr. J. Koch (San Fran. '10), formerly of Venice, Calif., is now located in Santa Monica, Calif.

Dr. P. M. Self (Ind. '09), of Farmersburg, Ind., recently wrote that he was recovering from his illness.

Dr. E. U. Kingery (Ind. '11), of Kokomo, Ind., recently completed a new office and garage at his home.

Dr. Claude McKinney (T. H. '13), of Brockton, Ill., has been reappointed Coles County (Ill.) veterinarian.

Dr. S. T. Pyper (O. S. U. '13) is chief of the Bureau of Food Inspection, Board of Health, Cincinnati, Ohio.

Dr. C. L. Woolard (Chi. '17), formerly of Benton, Ill., has been appointed chief dairy inspector of Tampa, Fla.

Dr. H. J. Larson (Chi. '18), formerly of Pelican Rapids, Minn., is now at 316 North Oak St., Fergus Falls, Minn.

Dr. C. H. Atkinson (Wash. '20) has been transferred fron Newman, Calif., to Fresno. Address: 2720 Fresno Street.

Dr. Joseph Patt (K. C. V. C. '93), of Mobile, Ala., has been heard from again, this time from Dusseldorf, Germany.

Dr. George R. Schaffer (Mich. '15), formerly of Brighton, Mich., is now in Detroit. Address: 2023 Clarkdale Avenue.

Dr. James A. Sluss (Ind. '21), formerly of Jacksonville, N. C., is now in Chicago, Ill. Address: 409 W. Garfield Blvd.

Dr. R. A. Gregory (K. C. V. C. '09), formerly of Westminster, Md., should now be addressed at Washington Grove, same state.

Dr. Roberto Plata Guerrero (U. P. '20), of Mexico, D. F., Mexico, sailed for New York, via Havana, about the middle of July.

Dr. E. B. Parker (K. C. V. C. '17) has been reappointed Hancock County (Ill.) Veterinarian for the year beginning August 1, 1926.

Dr. J. R. Brown (McK. '08) has been reappointed LaSalle County (Ill.) Veterinarian for another year by the Board of Supervisors.

Dr. H. E. Rea (Ont. '02), of West Branch, Mich., lost his veterinary hospital by fire recently, including his stock of drugs and instruments.

Dr. Ira W. Eichelberger (Ind. '12) has requested a change of address from Los Angeles to 3803 Clinton Avenue, N. W., Cleveland, Ohio.

Dr. G. F. Myers (Ont. '95), of Shelbyville, Ill., has moved to Sullivan, Ill., and is now associated in practice with Dr. S. J. Lewis (McK. '12).

Dr. Roy Becker (McK. '08), of LeRoy, Minn., attended the clinic of the Veterinary Association of Manitoba, at Portage la Prairie, July 20.

Dr. J. V. Bayles (T. H. '14), of Pennville, Ind., recently suffered a severe injury to his left wrist when he was trampled by a cow which he was treating.

Dr. George W. Hess (T. H. '18), of Hillsboro, Ill., has been reappointed for another year Montgomery County Veterinarian by the Board of Supervisors.

Dr. Charles F. Pangburn (Ind. '09), of Charlestown, Ind., has been appointed a mamber of the Indiana State Live Stock Sanitary Board by Governor Jackson.

Dr. C. L. Phillips (O. S. U. '19) has requested that the JOURNAL be sent to him at Hampton, Va., R. No. 3, instead of Chattanooga, Tenn., where he has been located.

Dr. Carl F. Fox (Mich. 26), of Standish, Mich., had the contract of securing 275 horses for use in the fifteen-day military maneuvers at Camp Grayling during August.

Dr. F. M. Hopper (Ind. '16), of Milford, Ind., received slight bruises when his car turned over near his home, the result of being forced off the road by another speeding auto.

Dr. M. M. Fletcher (Chi. '06), of Illiopolis, Ill., has purchased the practice of Dr. Frederick R. Whipple (McK. '02), of Peoria, Ill., who is leaving practice because of ill health.

In a period of diminished ant-hog cholera serum supply, as has prevailed the past thirty days or more, a new value attaches to a policy of selling only to graduate veterinarians. The output sold to quackery diminishes proportionately the amount available to the graduate.

As yet, the established clientele of graduate houses have suffered little or no inconvenience, but should it materialize, it cannot be charged to preceding quackery traffic.

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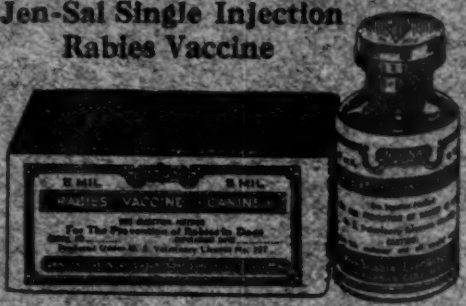

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Inject subcutaneously before animal is exposed.

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Human Rabies vaccine is marketed in packages containing 14- and 21-dose treatments.

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Rend—Complete Human Rabies treatment, 21 doses in vials, with one all-glass aseptic syringe and 2 needles $11.00

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This treatment should be administered by a physician, but patient may continue in regular work during treatment.

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